

AD-A078 561

EXERCISE DESERT ROCK LAS VEGAS NV  
EXERCISE DESERT ROCK VII AND VIII. ANNEX L. (U)  
1957

F/6 18/3

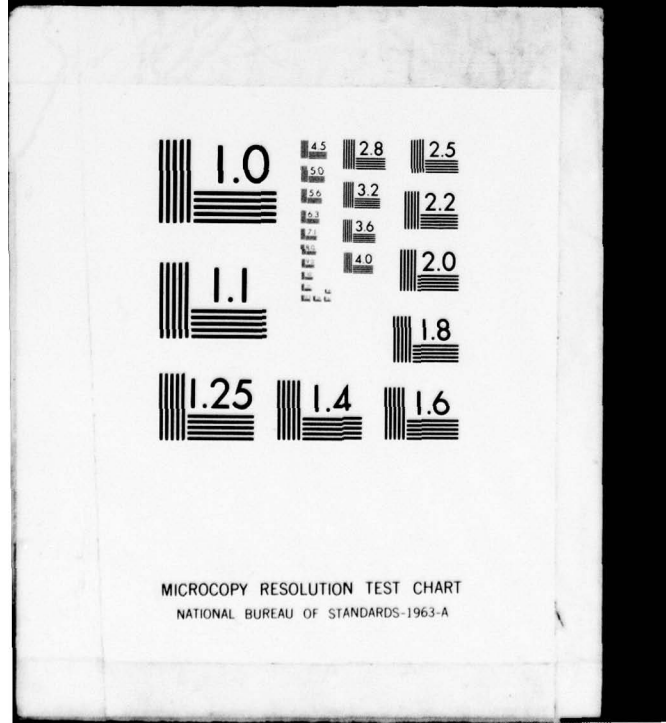
UNCLASSIFIED

NL

1 OF 3  
AD  
A078561



07856



MICROCOPY RESOLUTION TEST CHART  
NATIONAL BUREAU OF STANDARDS-1963-A



PHOTOGRAPH THIS SHEET

ADA 078561

DTIC ACCESSION NUMBER



LEVEL

AD75355



INVENTORY

Desert Rock Exercise VII and VIII  
Final Report Annex L 1957  
DOCUMENT IDENTIFICATION

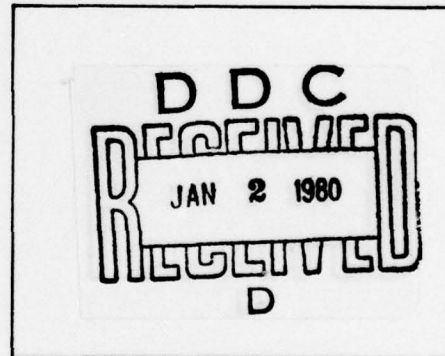
**DISTRIBUTION STATEMENT A**

Approved for public release;  
Distribution Unlimited

DISTRIBUTION STATEMENT

ACCESSION FOR	
NTIS	GRA&I <input checked="" type="checkbox"/>
DTIC	TAB <input type="checkbox"/>
UNANNOUNCED	<input type="checkbox"/>
JUSTIFICATION	
Per Hq. on file	
BY	
DISTRIBUTION /	
AVAILABILITY CODES	
DIST	AVAIL AND/OR SPECIAL
A	

DISTRIBUTION STAMP



DATE ACCESSIONED

79 12 18 570  
DATE RECEIVED IN DTIC

PHOTOGRAPH THIS SHEET AND RETURN TO DTIC-DDA-2

411424

ADA078561

Rock Exercise  
L III

UNCLASSIFIED

#4

UNCLASSIFIED

DESERT ROCK Exercise VII and VIII  
Final Report  
Annex L  
1957

VIII  
(10)

5274

UNCLASSIFIED

C.C.I.  
TECHNICAL LIBRARY  
OCT 9 1957  
of the  
2/27/70  
DEFENSE ATOMIC  
SUPPORT AGENCY

42618

UNCLASSIFIED

NO RESTRICTED DATA OR FORMERLY RESTRICTED DATA  
DOE MARK HAS NO SIGNIFICANCE TO ITS DECLASSIFICATION  
COORDINATION WITH ~~DOE~~ *DOE*

RECEIVED  
5 NOV 1957  
2-8

AG FILES  
DISPATCHED  
NOV 4 - 1957  
MAIL ROOM

Statement is  
Approved for public release  
Distribution unlimited

68-002

Classification (Cancelled) ~~(S)~~

*DOA*  
*copy of annex 005 on 1003/1*

2785



**UNCLASSIFIED**

~~SECRET~~

RECOMMENDED FORMAT FOR PRINTING OF PHOTOS

It is recommended that the pre-detonation and post-detonation photos contained in this Annex be printed as indicated on the attached format. Each photo has been labeled to show photo number and before or after as appropriate. The words BEFORE and AFTER are used for brevity.

An alternate system of printing photos which would conserve bulk, space, and facilitate ease of reference is shown in the alternate format. However, it is not considered as practical from a production standpoint.

MAY BE DOWNGRADED TO UNCLASSIFIED WHEN  
SEPARATED FROM CLASSIFIED INCLOSURE

42918

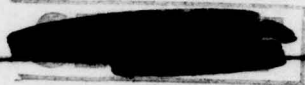


~~SECRET~~

~~SECRET~~

**UNCLASSIFIED**

100348



UNCLASSIFIED

BEFORE

PHOTO

4 1/2" x 3 1/4"

OTORH

4 1/2" x 3 1/4"

BEFORE

NO. 1

MAY BE DOWNGRADED TO UNCLASSIFIED WHEN  
REMOVED FROM CLASSIFIED INCLOSURE

AFTER

OTORH

4 1/2" x 3 1/4"

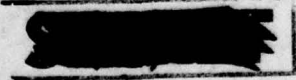
PHOTO

4 1/2" x 3 1/4"

BEFORE



UNCLASSIFIED



[REDACTED]

---

UNCLASSIFIED

PHOTO

PHOTO

PHOTO

BEFORE

4 1/2" x 3 1/2"

4 1/2" x 3 1/2"

---

NO. 2

---

AFTER

PHOTO

PHOTO

PHOTO

4 1/2" x 3 1/2"

4 1/2" x 3 1/2"

UNCLASSIFIED

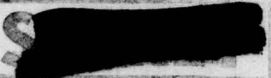
---

[REDACTED]





ALTERNATE FORMAT



UNCLASSIFIED

PHOTO

No. 1

4 1/2" x 3 1/4"

BEFORE

ITEM	YARDS FR GZ	ORIENTA- TION	DAMAGE		DESCRIPTION OF ACTUAL DAMAGES
			PREDICTED	ACTUAL	
Truck, 1/2 ton	000	Head On, Surface	Severe	Severe	Hood torn off; seats ripped out; paint scorched; engine parts cracked and require replacing; displaced several yards.

MAY BE DOWNGRADED TO UNCLASSIFIED WHEN  
SEPARATED FROM CLASSIFIED INCLOSURE

PHOTO

4 1/2" x 3 1/4"

No. 1



UNCLASSIFIED



[REDACTED]

UNCLASSIFIED

ANNEX L  
TO FINAL REPORT  
EXERCISE DESERT ROCK  
VII and VIII



1957

UNCLASSIFIED

~~SECRET~~

RESTRICTED DATA  
Atomic Energy  
[REDACTED]

~~SECRET~~

TABLE OF CONTENTS

UNCLASSIFIED

PART I

Atomic Bursts "PRISCILLA" and "SMOKY" ..... Tab A

General Information ..... Tab B

PART II

Technical Consideration - Shot "PRISCILLA"..... Tab C

Equipment Display - Shot "PRISCILLA"..... Tab D

Damage Comparison - Predicted vs Actual - Shot "PRISCILLA"..... Tab E

Pre and Post Shot Photos - Shot "PRISCILIA" ..... Tab F

PART III

Technical Considerations - Shot "SMOKY"..... Tab G

Equipment Display - Shot "SMOKY"..... Tab H

Damage Comparison - Predicted vs Actual - Shot "SMOKY"..... Tab I

Pre and Post Shot Photos - Shot "SMOKY"..... Tab J



UNCLASSIFIED<sub>2</sub>

~~SECRET~~

~~RESTRICTED DATA~~  
Atomic Energy Act of 1946

PART I



~~SECRET~~

UNCLASSIFIED

General View

of

ATOMIC BURST

"FRISCILLA"

39 KT

700' Balloon

3

~~SECRET~~  
UNCLASSIFIED

RESTRICTED DATA  
~~SECRET~~  
Atomic Energy Act, 1946



~~SECRET~~  
UNCLASSIFIED

General View

of

ATOMIC BURST

"SMOKY"

45 KT

700' Tower

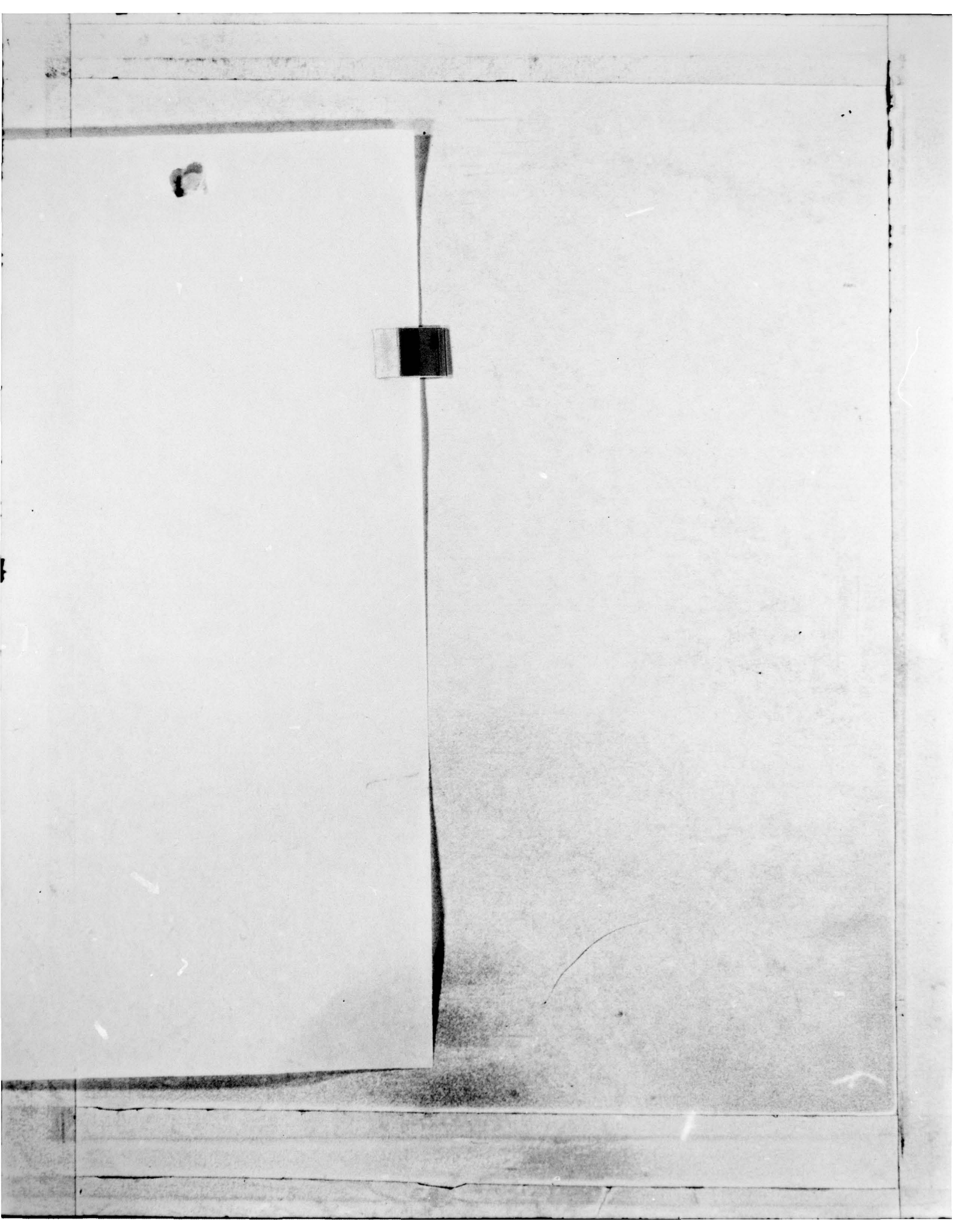
4

~~SECRET~~  
UNCLASSIFIED

~~RESTRICTED DATA~~  
Atomic Energy Act of 1946







**SECRET**

**General Information**

The purpose of displaying the various types of field equipment shown herein was to afford all participating troops and official observers reporting to Camp Desert Rock, Nevada, and opportunity to gain an appreciation of the effects of an atomic detonation on various types of field equipment.

The two atomic detonations considered in this report represent the only shots in which field equipment peculiar to the services was displayed solely for the express purpose of indoctrinating official observers and troop participants on the effects of an atomic detonation. Originally, at the beginning of the exercise, equipment display was planned for four shots as follows:

<u>Shot</u>	<u>Design Yield</u>	<u>Type</u>
PRISCILLA	40 KT	700' Balloon
SHASTA	12 KT	500' Tower
SMOKY	45 KT	700' Tower
NEWTON	50 KT	1500' Balloon

However, due to numerous delays and changes in shot schedules only "PRISCILLA" and "SMOKY" could be utilized in conjunction with the observer program.

Approximately 1325 observers and troop participants were afforded the opportunity to observe the pre and post shot equipment display area during shot "PRISCILLA", and 920 during shot "SMOKY". All observers reporting to Camp Desert Rock for other than the above shots were escorted on a conducted tour of the "PRISCILLA" post shot equipment display area to view the effects of a 40 KT atomic detonation on service equipment.

**UNCLASSIFIED**

5  
[REDACTED]  
[REDACTED] 46



**SECRET**

Assignment of real estate for the purpose of display of equipment was made by AEC, Camp Mercury, Nevada. Actual positioning of equipment in the vicinity of ground zero, and within the real estate boundaries allocated, was determined by the Deputy Exercise Directors Staff. In no case was any equipment placed further than 2500 yards from ground zero. All equipment was placed at varying orientations to ground zero, and in some cases, dug-in or placed in defilade on the surface of the ground. Defilade protection was effected in shot "SMOKY" only.

The atomic shot "PRISCILLA", which was detonated at Frenchman's Flat in the Nevada Test Site on 24 June 1957, indicated the effects on equipment over extremely flat uninterrupted terrain of ideal surface conditions. The atomic shot "SMOKY", detonated in the Yucca Flat area on the Nevada Test Site on 31 August 1957, presented terrain conditions of both the flat surface conditions and the "hill and dale" or interrupted surface effect. Results of these conditions imposed on effects on various types of field equipment from an atomic detonation are contained herein.

Damage prediction computations are based strictly on the use of formulas and iso-damage curves in TM 23-200, Capabilities of Atomic Weapons. Damage levels are in accordance with criteria established in paragraph 56, page 255 of the manual.

Equipment selected for prediction of damage was selected at random without any attempt being made to position equipment within an assured damage level.

In the case of shot "PRISCILLA", a review of predicted and actual damage reveals almost 100 percent prediction of the damage actually sustained. This was relatively simple since terrain was flat and without obstruction

[REDACTED]  
**UNCLASSIFIED**

6

[REDACTED]  
RESTRICTED DATA  
At [REDACTED] 1946

~~SECRET~~

and straight line interpolation could be made for intermediate distances from ground zero to target. The foregoing can be applied equally as well to the administrative display of equipment in shot "SMOKY". However, prediction of damage, in the case of equipment displayed tactically in "SMOKY", was not as successful. This was not due however, to erroneous results of computations based on TM 23-200, but rather on the belief that equipment was in full defilade when actually it was not. Subsequent computations, based on equipment being in partial defilade, supported these findings. It is of importance to note that equipment positioned in partial defilade suffered predicted severe damage to the exposed portion and light damage to the lower or protected portion of the equipment. Actual on the ground evaluation readily supported the rule, in predicting damage, to modify predictions of damage by reducing by two levels in the case of severe, and by one level in the case of moderate when equipment is in full defilade. This theory was fully correct in those cases where equipment was in complete defilade.

Damage predictions to drag sensitive targets based on damage criteria in TM 23-200 can be employed with excellent reliability. Secondary tests conducted to predict thermal damage to heat susceptible targets also produced excellent reliability.

All photos of equipment and resultant damage were taken in almost all cases, on a line between ground zero and the item being photographed.

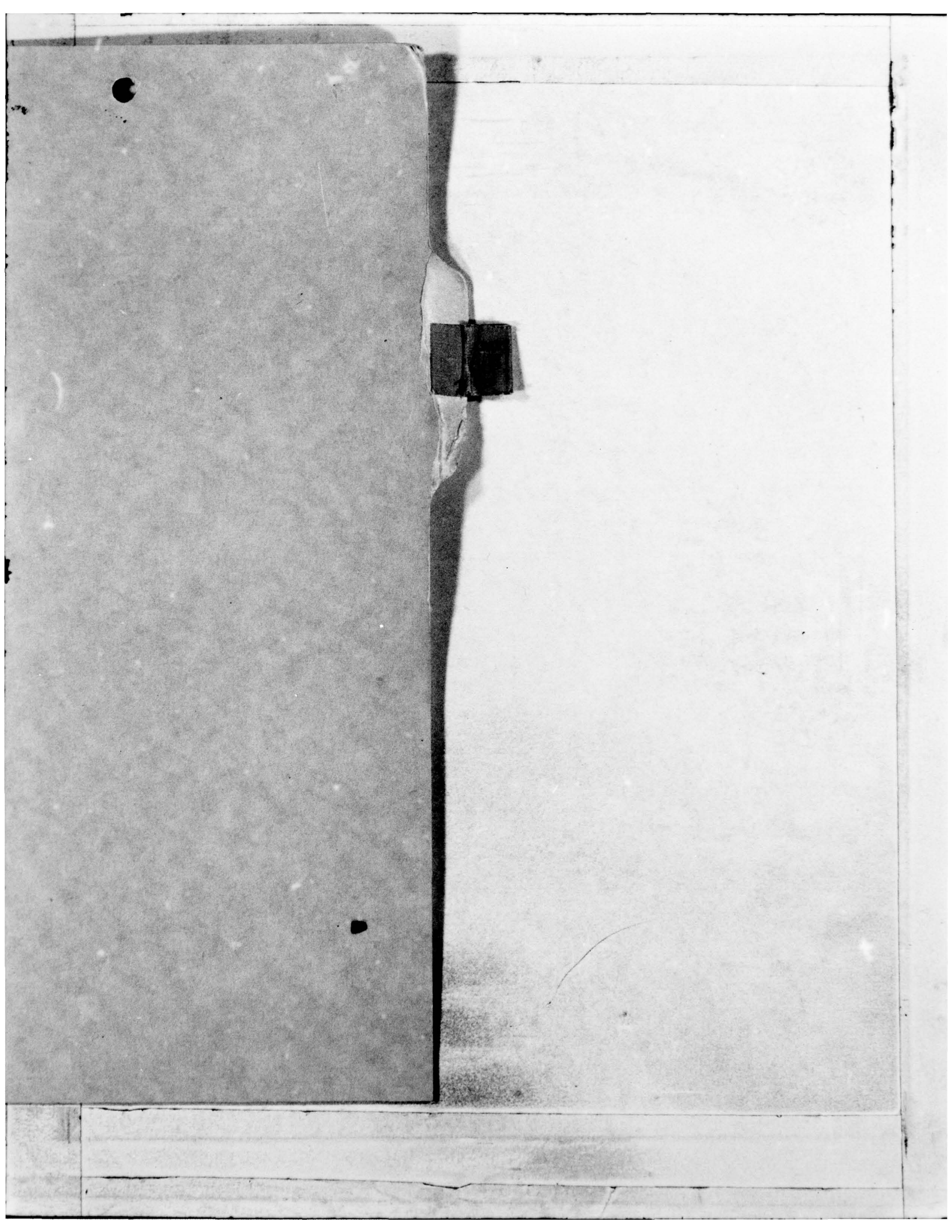
Requirements for additional prints of photos contained herein should be forwarded to the following agency:

Army Photographic Agency  
Room 5A 474  
The Pentagon  
Washington 25, D. C.

~~SECRET~~

RECEIVED DATA  
At [redacted] 1946





Technical Considerations  
Shot "PRISCILLA"  
(Shot Day - 24 June 1957)

Design Yield - 40 KT <sup>00E</sup>

Actual Yield - 39 KT

Ht of Burst - 700 Feet

Time of Burst - 0445 Hours

Temperature - 17<sup>0</sup>C

Air Density - 910 mb

Elevation - 3776 Feet Above MSL (Burst Point)

Humidity - 29 Percent

~~SECRET~~

UNCLASSIFIED

DYNAMIC PRESSURES

60 psi	-	480 Yards
40 psi	-	545 Yards
20 psi	-	665 Yards
15 psi	-	720 Yards
10 psi	-	800 Yards
5 psi	-	990 Yards
2 psi	-	1230 Yards
1 psi	-	1490 Yards

THERMAL RADIATION

60 cal/cm <sup>2</sup>	-	1250 Yards
40 cal/cm <sup>2</sup>	-	1550 Yards
30 cal/cm <sup>2</sup>	-	1775 Yards
20 cal/cm <sup>2</sup>	-	2200 Yards
10 cal/cm <sup>2</sup>	-	3050 Yards
5 cal/cm <sup>2</sup>	-	4200 Yards

All computations to arrive at predicted damage was based on scaling laws and damage curves in TM 23-200, Capabilities of Atomic Weapons, exclusively.

8  
~~SECRET~~

UNCLASSIFIED

~~XXXXXXXXXX~~

UNCLASSIFIED

EQUIPMENT DISPLAY AREA

Shot "PRISCILLA"

~~XXXXXXXXXX~~

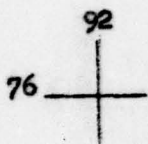
UNCLASSIFIED

RESTRICTED DATA  
~~XXXXXXXXXX~~  
Atomic Energy Act, 1946  
~~XXXXXXXXXX~~

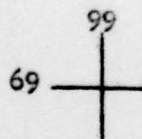
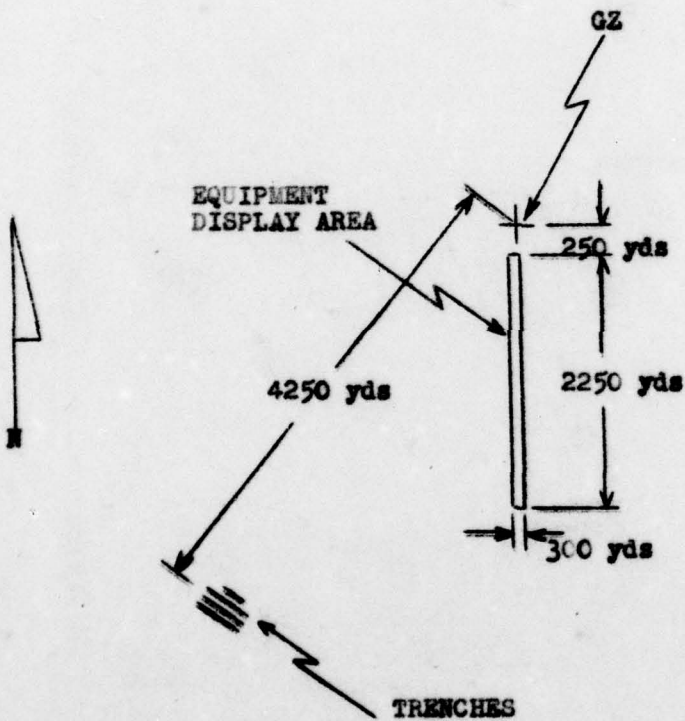


~~SECRET~~  
PATISCELLA

UNCLASSIFIED



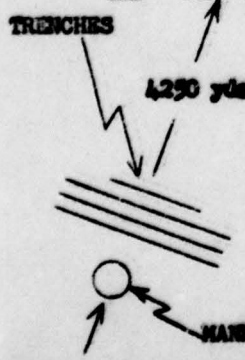
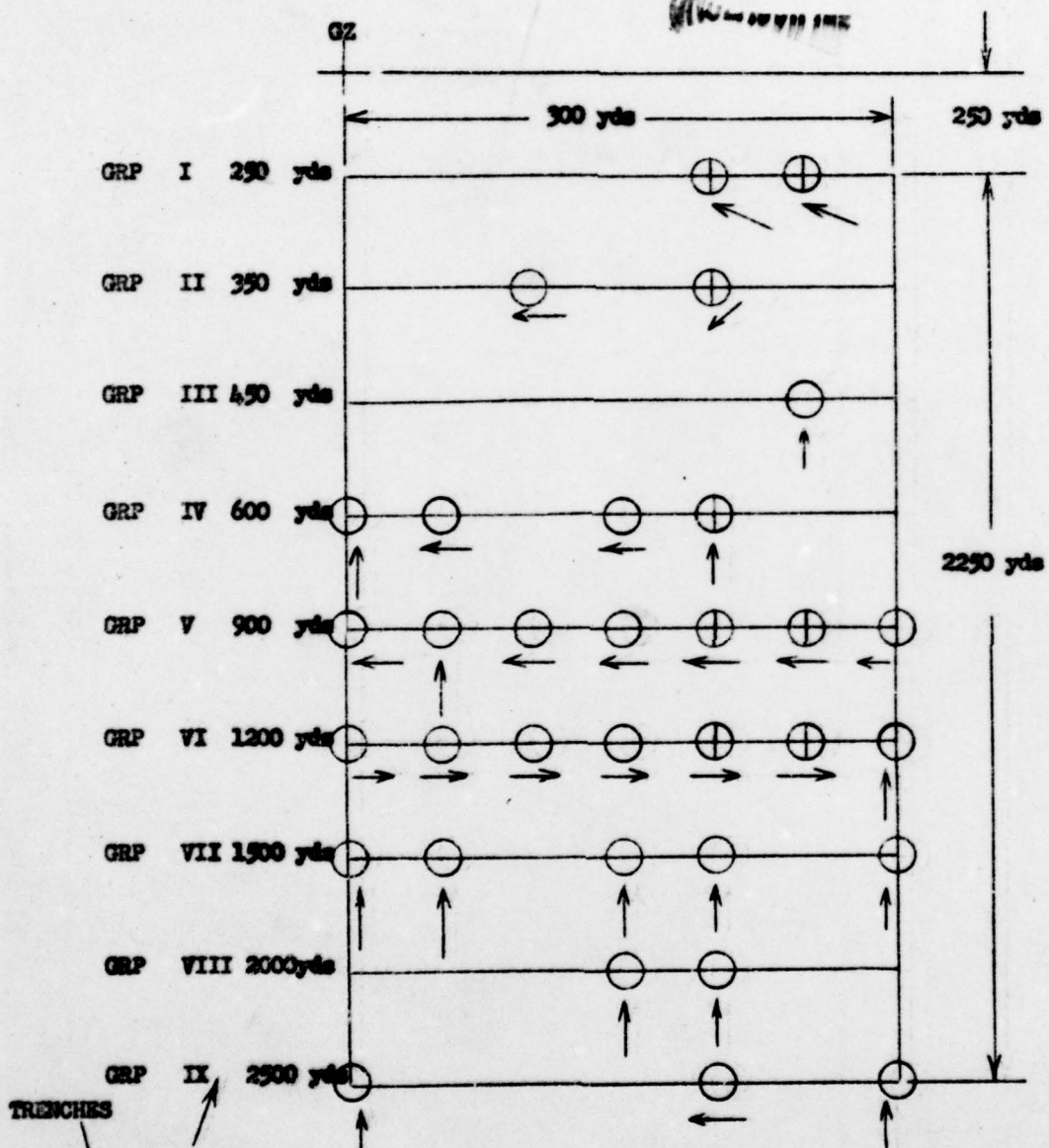
Map: NEVADA, 1:50,000  
FRENCHMAN LAKE  
Sheet



TRENCHES  
6' Deep  
2' Wide  
100 Yds long (Cmd trench)  
325 Yds long (each observer trench)  
100' Between trenches

9  
UNCLASSIFIED

RESTRICTED DATA  
Atomic Energy Act 1946



**LEGEND:**

- INDICATES ITEM ON DISPLAY ON SURFACE
- ⊕ INDICATES ITEM DUG-IN
- ← INDICATES ITEM FACING SIDE-ON
- ↑ INDICATES ITEM FACING HEAD-ON

**RESTRICTED DATA**  
 Atomic Energy Act, 1946

~~SECRET~~

EQUIPMENT DISPLAY  
Shot "PRISCILLA"

GP	ITEM	YARDS GZ	PREDICTED DAMAGE	ACTUAL DAMAGE
I	Mortar, 81mm	300	Severe	Moderate
	Tank, M24	345	Severe	Severe
II	Tank, M4	364	Severe	Severe
	Truck, 2 1/2 ton	380	Severe	Severe
III	Truck, 2 1/2 ton	515	Severe	Severe
IV	Tank, M4	600	Moderate	Light
	Tractor, Engineer	602	Severe	Severe
	Crane, shovel	618	Severe	Severe
	Cans, gas 5 gal	632	Light	Light
V	Truck, 2 1/2 ton	900	Severe	Severe
	MG, cal 30	902	Mod-lt	Moderate
	Truck, 1/2 ton	906	Severe	Severe
	Tank, M24	912	Moderate	Moderate
	MG, Cal 30	915	Light	Light
	Truck, 1/2 ton	922	Light	Light
	Carrier, M29c	950	Severe	Severe
VI	MG, Cal 50	1200	Light	Light
	Trailer, 1 ton	1202	Moderate	Light
	Truck, 1/2 ton	1205	Moderate	Moderate
	Truck 2 1/2 ton	1210	Moderate	Moderate
	Truck, 1/2 ton	1215	Mod-lt	None
	Truck, 3/4 ton	1225	Mod-lt	Light
Tank, M24	1242	Mod-lt	Light	
VII	Mannequin, Stdg.	1500	Destroyed	Destroyed
	Mortar, 81mm	1500	Light	Light
	Tank, M4	1508	Light	Light
	Gun, 57mm AT	1512	Light	Light
	Mannequin, Prone	1528	Destroyed	Destroyed
VIII	Tractor, dozer full track	2000	Light	None
	Gun, 40mm AAA	2010	Light	None
IX	Mannequin, Standing	2500	Scorched	Destroyed
	Truck, 1/2 ton	2510	Light	Light
	Mannequin, Prone	2515	Singed	Singed
Trenches	Mannequin	4250	None	None

~~SECRET~~  
UNCLASSIFIED

~~RESTRICTED DATA~~  
Atomic Energy Act 1946



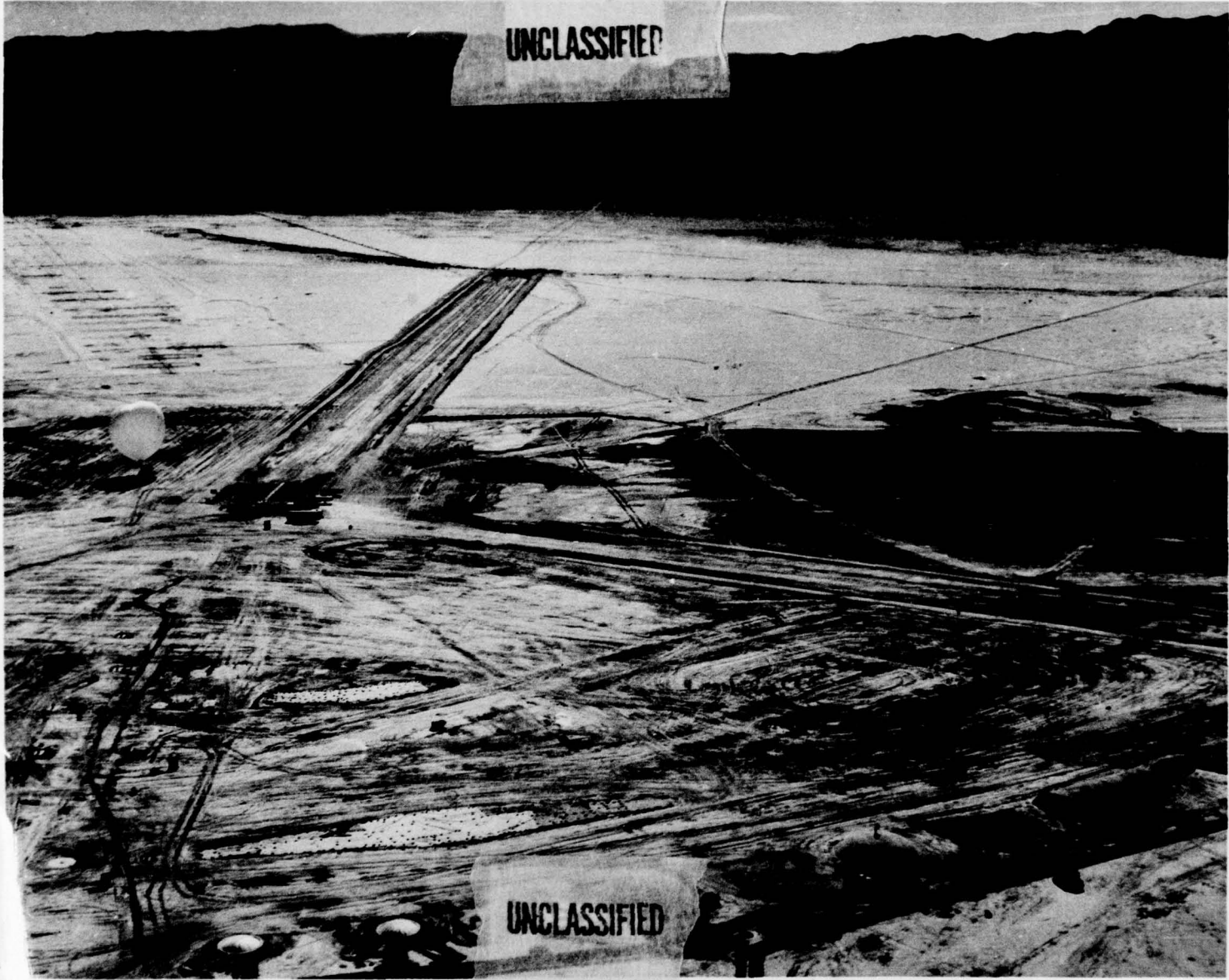
"FRISCILLA"

and

Equipment Display Area

(Right)

UNCLASSIFIED



UNCLASSIFIED



UNCLASSIFIED

UNCLASSIFIED





DAMAGE COMPARISON

PREDICTED VS ACTUAL

Shot "FRISCILLA"



~~SECRET~~

~~UNCLASSIFIED~~

DEFINITION  
OF  
DAMAGE

- LIGHT** - Damage which does not interfere with immediate military operations, but necessitates some repair to restore the items complete military usefulness.
- MODERATE** - Damage which is sufficient to prevent any military use until some repairs are effected.
- SEVERE** - Damage whenever repair is essentially impossible without removal to a major repair facility.

15

~~SECRET~~

UNCLASSIFIED

**UNCLASSIFIED**

**Comparison Chart**

**EXERCISE DESERT ROCK VII and VIII**

**SHOT: Priscilla**

**ANTICIPATED YIELD: 40 KT**

**ACTUAL YIELD: 39 KT**

PHOTO REF. NR.	ITEM	DISTANCE From GZ (Yards)	ORIENTATION & PROTECTION	DAMAGE CLASSIFICATION		DESCRIPTION OF ACTUAL DAMAGES
				PREDICTED	ACTUAL	
1	Mortar, 81mm	300	45° dug in below surface	Severe	Severe	Weapon blown out of hole and blistered; tripod broken; Elevating knob bent.
2	Tank, M-24	345	45° dug in below surface	Severe	Severe	Turret blown 90 feet; tracks blown off; whole frame caved in.
3	Truck, 2 1/2 ton	380	45° left dug in below surface	Severe	Severe	Twisted wreckage; tires blown off; laying on side; cab demolished.
4	Truck, 2 1/2 ton flame thrower	515	Head on, surface	Severe	Severe	Demolished; scattered 100 yards.
5	Tank, M-4	600	Head on, surface	Moderate	Light	Tank displaced approximately 10 feet; paint scorched on G3 side and front; front fenders bent in. Tank reusable.
6	Tractor D-8, full track	602	Side on, surface	Severe	Severe	Tractor displaced 100 feet and tipped upside down; engine blown free of chassis; parts of tractor blown from 650 yd. marker to 900 yard marker.

16

**UNCLASSIFIED**

16 **UNCLASSIFIED**

**RESTRICTED DATA**

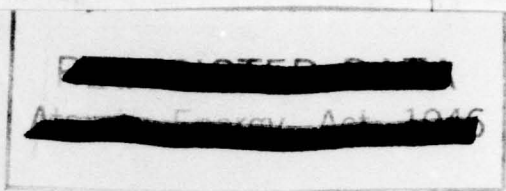
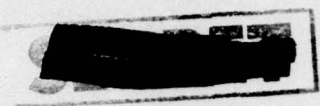
~~UNCLASSIFIED~~  
UNCLASSIFIED

~~RESTRICTED DATA~~  
~~Act 1946~~

PHOTO REF. NR.	ITEM	DISTANCE From GZ (Yards)	ORIENTATION & PROTECTION	DAMAGE CLASSIFICATION		DESCRIPTION OF ACTUAL DAMAGES
				PREDICTED	ACTUAL	
7	Crane, shovel	618	Side on, Surface	Severe	Severe	Main portion of crane assembly displaced approximately 50 feet; one track blown off; super structure collapsed; cab blown into sections and displaced up to 400 yards; operator seat displaced 50 yards; main assembly toppled upside down; crane displaced in sections up to 200 yards to rear.
8	Gas, gas 5 gal	632	Edge on, dug in below surface	Light	Light	Hole filled in; no noticeable damage.
9	Tank, M-4	364	Side on, Surface	Severe	Severe	Turret blown 100 feet; tank turned upside down; track blown off.
10	Truck, 2 1/2 ton	900	Side, surface	Severe	Severe	Truck bed blown off and displaced approximately 300 yards to the rear; one wheel displaced 200 yards; one fender displaced 100 yards to the rear; one complete set of dual wheels and axle displaced 75 yards over a dike; chassis completely buckled and displaced 70 yards; engine blown from chassis and laying 10 feet from chassis.

~~UNCLASSIFIED~~  
UNCLASSIFIED

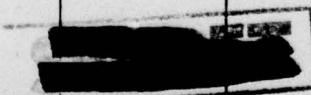




UNCLASSIFIED

PHOTO REF. NR.	ITEM	DISTANCE From GZ (Yards)	ORIENTATION & PROTECTION	DAMAGE CLASSIFICATION		DESCRIPTION OF ACTUAL DAMAGES
				PREDICTED	ACTUAL	
11	Machine gun, cal 30	902	Head on, surface	Moderate - light	Light	Barrel assembly displaced 75 yards to the rear; tripod displaced 75 yards to rear and one leg bent.
12	Truck, 1/4 ton	906	Side on, surface	Severe	Severe	Body displaced 150 yards to the rear; radiator and grill displaced 100 yards to the rear, engine displaced 125 yards; parts of body, engine and fender displaced 230 yards to the rear transfer case and one wheel displaced 100 yards.
13	Tank, M-24	912	Side on, Surface	Moderate	Moderate	Tank tipped upside down; damage to light metal full length of tank; no displacement apparent.
14	Machine gun, cal 30	915	Head on, dug in (parapet)	Light	Light	Blown back in hole; dirty.
15	Truck, 1/4 ton	922	Head on, dug in below surface	Light	Light	Head open and bent; windshield bent back; hole filled with 2 feet of dirt.

18



UNCLASSIFIED

~~SECRET~~  
UNCLASSIFIED

~~SECRET~~  
UNCLASSIFIED

PHOTO REF. NR.	ITEM	DISTANCE From GZ (Yards)	ORIENTATION & PROTECTION	DAMAGE CLASSIFICATION		DESCRIPTION OF ACTUAL DAMAGES
				PREDICTED	ACTUAL	
16	Carrier, M-29C	950	Side on, surface	Severe	Severe	Overturned and rolled; destroyed; blown about 75 yards.
17	Machine gun cal 50	1200	Head on, surface	Light	Light	Gun blown off tripod; tripod displaced 4 feet to rear of gun.
18	Trailer, 1 ton	1202	Side on, surface	Moderate	Light	Trailer displaced 10 feet to the rear; paint scorched on bed side facing GZ; cloth covering chains riddled.
19	Truck, 1/4 ton	1205	Side on, surface	Moderate	Moderate	Windshield blown out; back end pushed in; left front fender broken loose at seam and flared up; battery case blown out and laying near jeep; hood buckled; paint scratched on side; back end of jeep displaced about 105°; driver's seat burned.
20	Truck, 2 1/2 ton	1210	Side on, surface	Moderate	Moderate	Truck bed bent on GZ side; hood collapsed; windshield frame buckled; truck displaced 2 feet to the rear; tappet cover blown loose from studs; paint scorched on GZ side; tires darkened but not damaged.

~~SECRET~~  
UNCLASSIFIED



~~SECRET~~  
UNCLASSIFIED

~~RESTRICTED DATA~~  
Act 1946

PHOTO REF. NR.	ITEM	DISTANCE From GZ (Yards)	ORIENTATION & PROTECTION	DAMAGE CLASSIFICATION		DESCRIPTION OF ACTUAL DAMAGES
				PREDICTED	ACTUAL	
21	Truck, 1/4 ton	1215	Side on, dug in below surface	Light	None	Dirty.
22	Truck, 3/4 ton	1225	Side on, dug in below surface	Moderate - Light	Light	Windshield smashed (no glass) and frame bent; hole filled with about 1 1/2 feet of dirt; hood dented.
23	Tank, M-24	1242	Head on, surface	Light	Very Light	Blistered paint.
24	Mannequin	1500	Face on, upright	Destroyed	Destroyed	Fatigue trousers shredded; 2x4 frame (T) broken off and displaced 4 feet to the rear; pistol belt, first aid packet and belt scorched; fatigue jacket shredded and displaced about 40 feet to the rear along with a 4 feet length of 2x4; helmet liner displaced approximately 55 feet to the rear.
25	Mortar, 81mm	1500	Head on, surface	Light	Light	Gun tipped over to the rear.
26	Tank, M-4	1508	Head on, surface	Light	Very Light	Paint scorched on GZ side; no apparent displacement.

~~SECRET~~  
UNCLASSIFIED

[REDACTED]

UNCLASSIFIED

PHOTO REF. NR.	ITEM	DISTANCE From GZ (Yards)	ORIENTATION & PROTECTION	DAMAGE CLASSIFICATION		DESCRIPTION OF ACTUAL DAMAGES
				PREDICTED	ACTUAL	
32	Truck, 1/4 ton	2510	Side on, surface	Light	Very light	Paint scorched on GZ side; back rest and sides of both front seats scorched on GZ side; hole 6 inches in diameter burned on one seat edge nearest GZ; tires darkened on GZ side.
33	Mannequin	2515	Laying face down towards GZ surface	Singed	Singed	Light scorch on both shoulders and one hip pocket.
34	Mannequin	4250	Face on, upright	None	None	None.

[REDACTED]

UNCLASSIFIED

[REDACTED] RESTRICTED DATA  
Atomic Energy Act 1946

PRE-SHOT  
and  
POST-SHOT  
PHOTOS

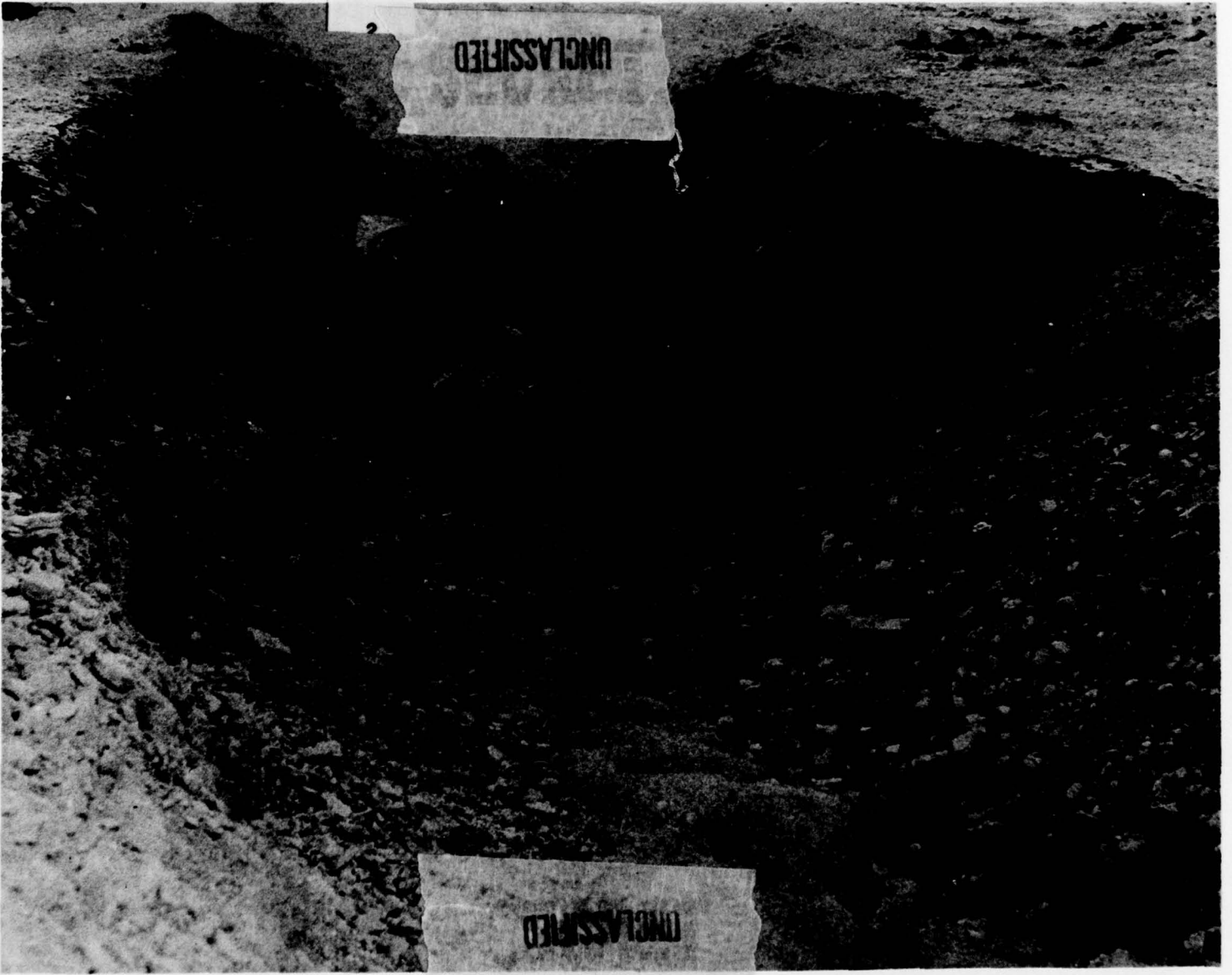
Shot "PRISCILLA"



AFTER  
2

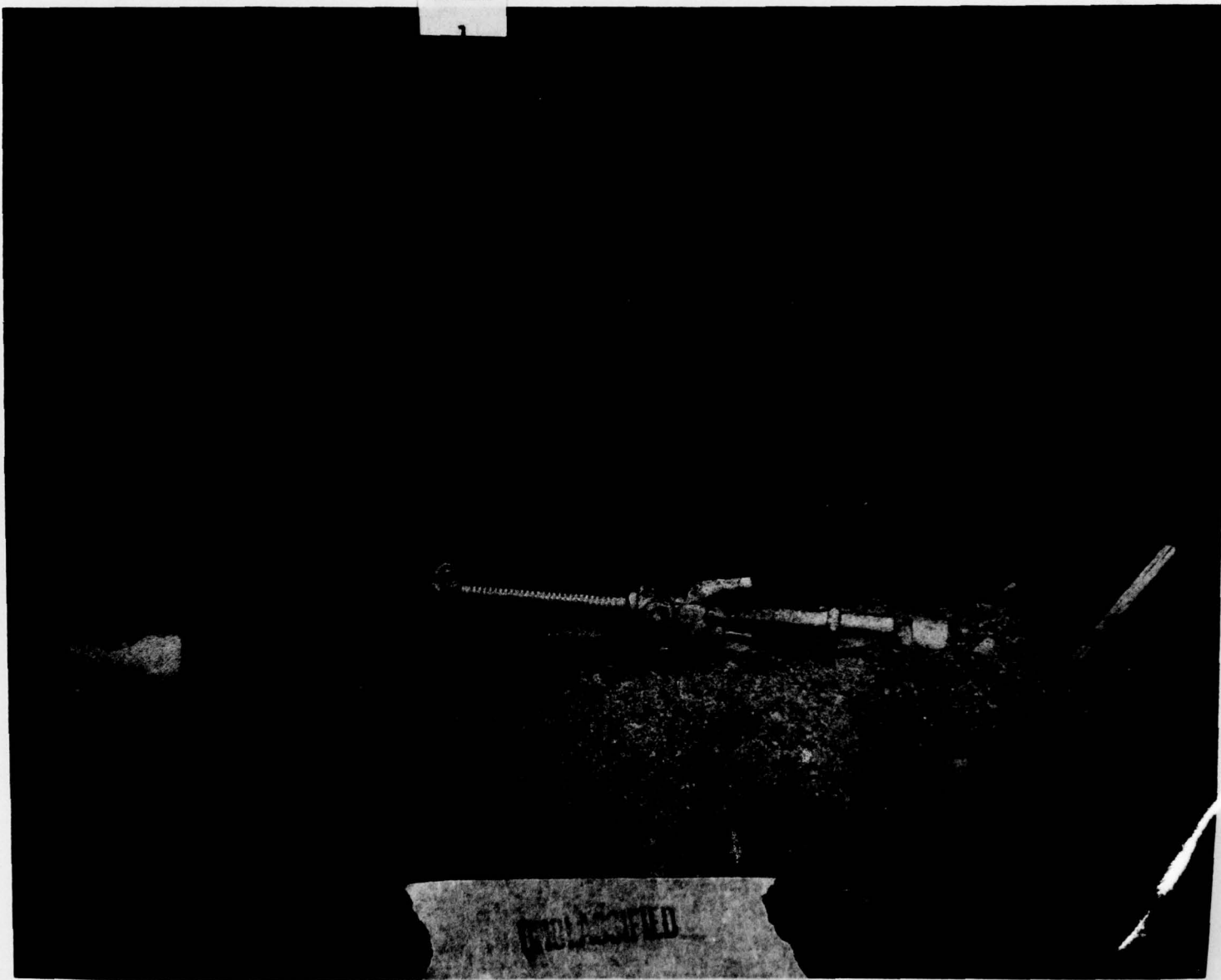
UNCLASSIFIED

UNCLASSIFIED



AFTER

1



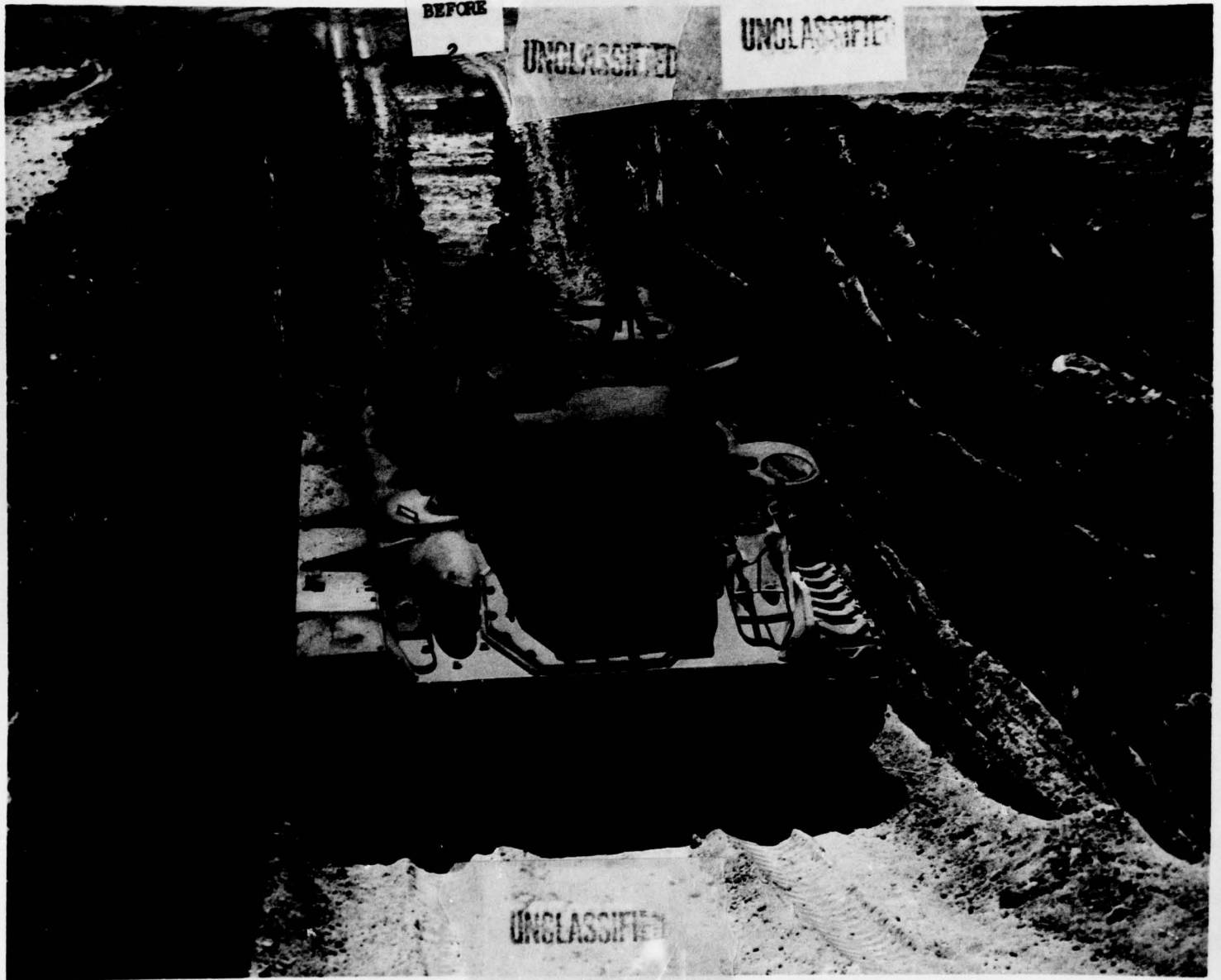
BEFORE

~~TOP SECRET~~

UNCLASSIFIED







AFTER

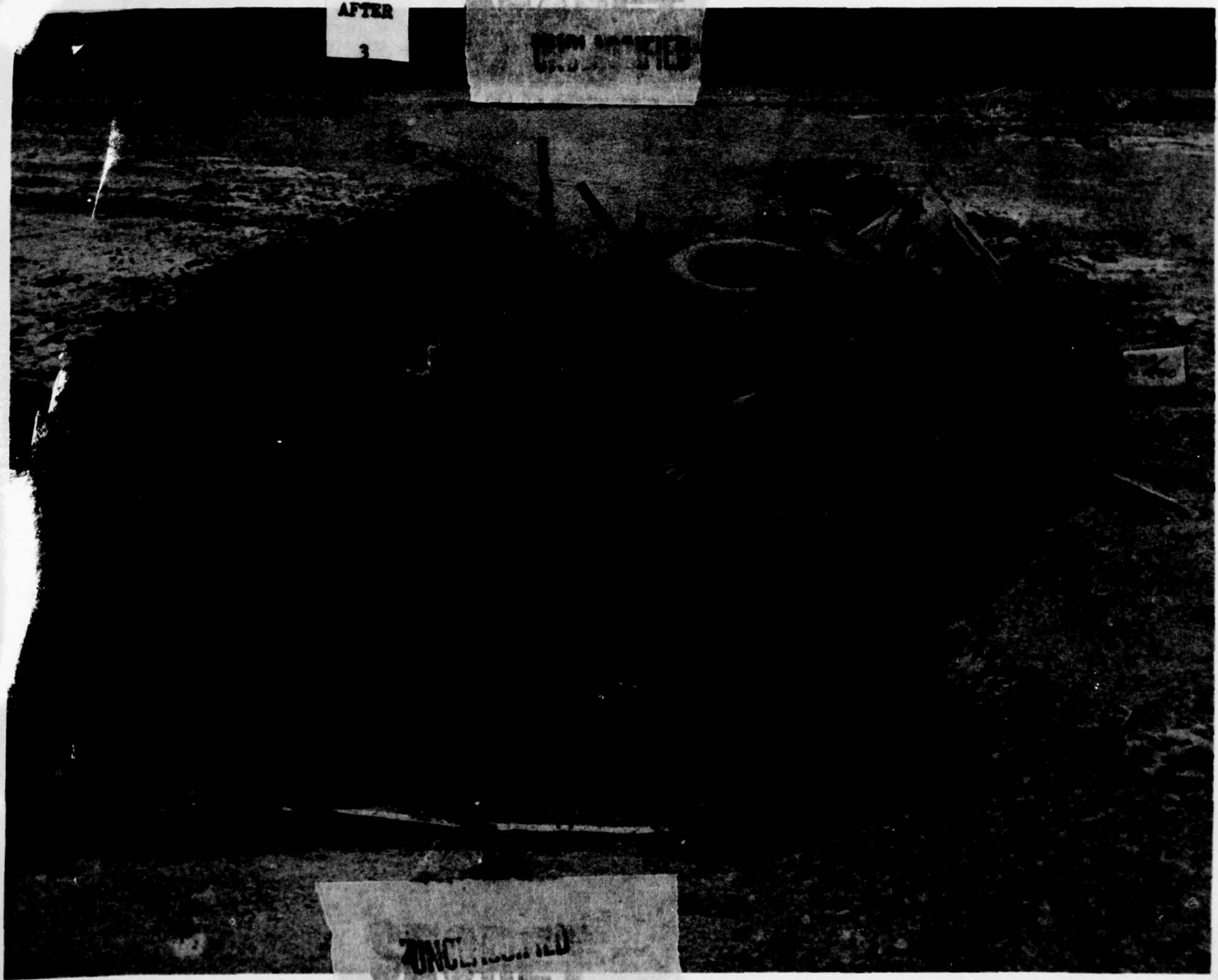
UNCLASSIFIED

UNCLASSIFIED



AFTER  
3

FOOTPRINTS  
CONFIRMED



ZINC  
CONFIRMED



BEFORE

UNCLASSIFIED



SECRET

UNCLASSIFIED

47359AS

6A 723 Δ

B 96

SECRET



AFTER

6

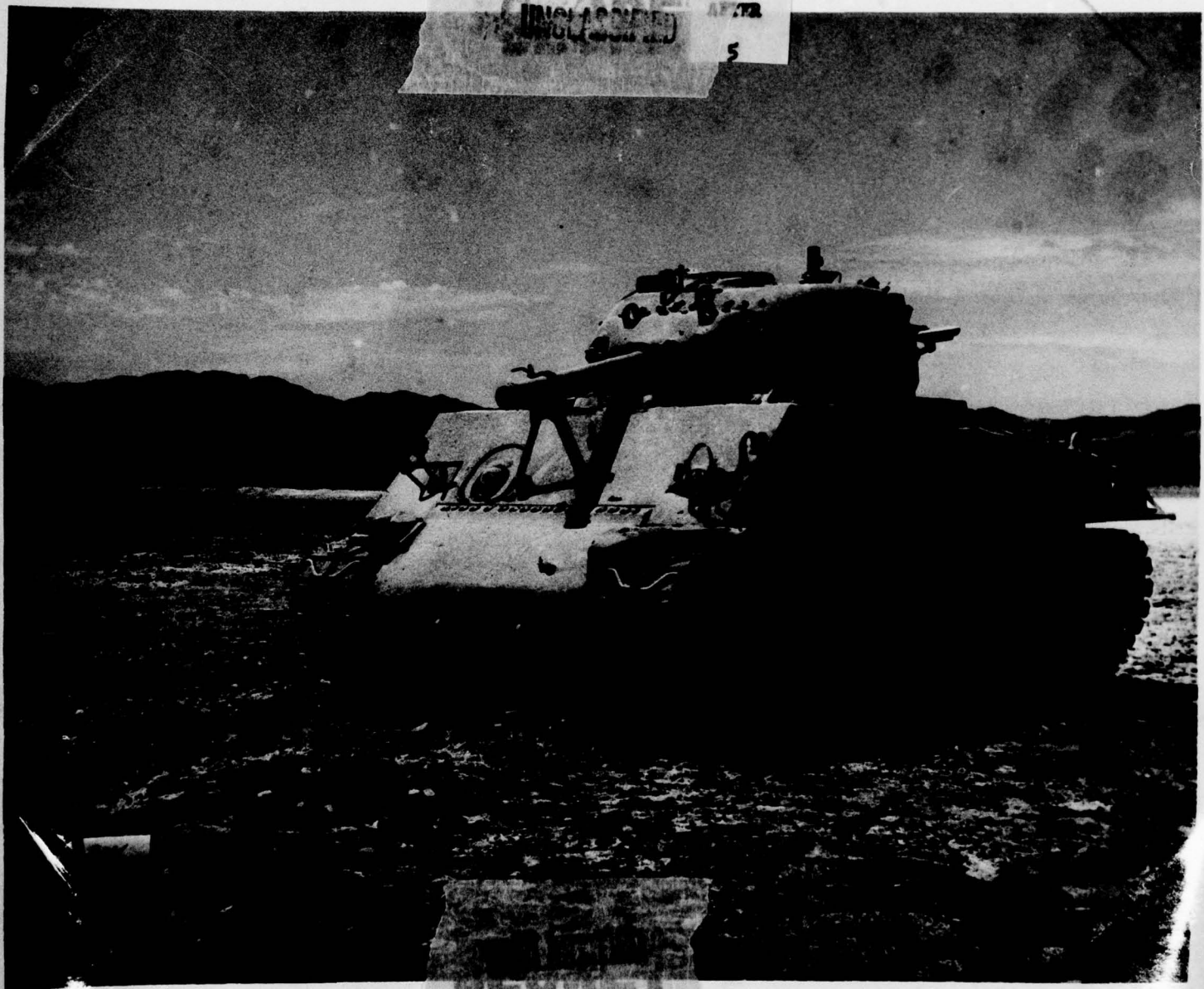
CLASSIFIED



CLASSIFIED



UNCLASSIFIED AFTER 5



DECLASSIFIED

BEFORE

5

~~SECRET~~  
UNCLASSIFIED



~~SECRET~~

BEFORE

6

~~SECRET~~  
UNCLASSIFIED



UNCLASSIFIED



AFTER

8

UNCLASSIFIED

600/200

UNCLASSIFIED

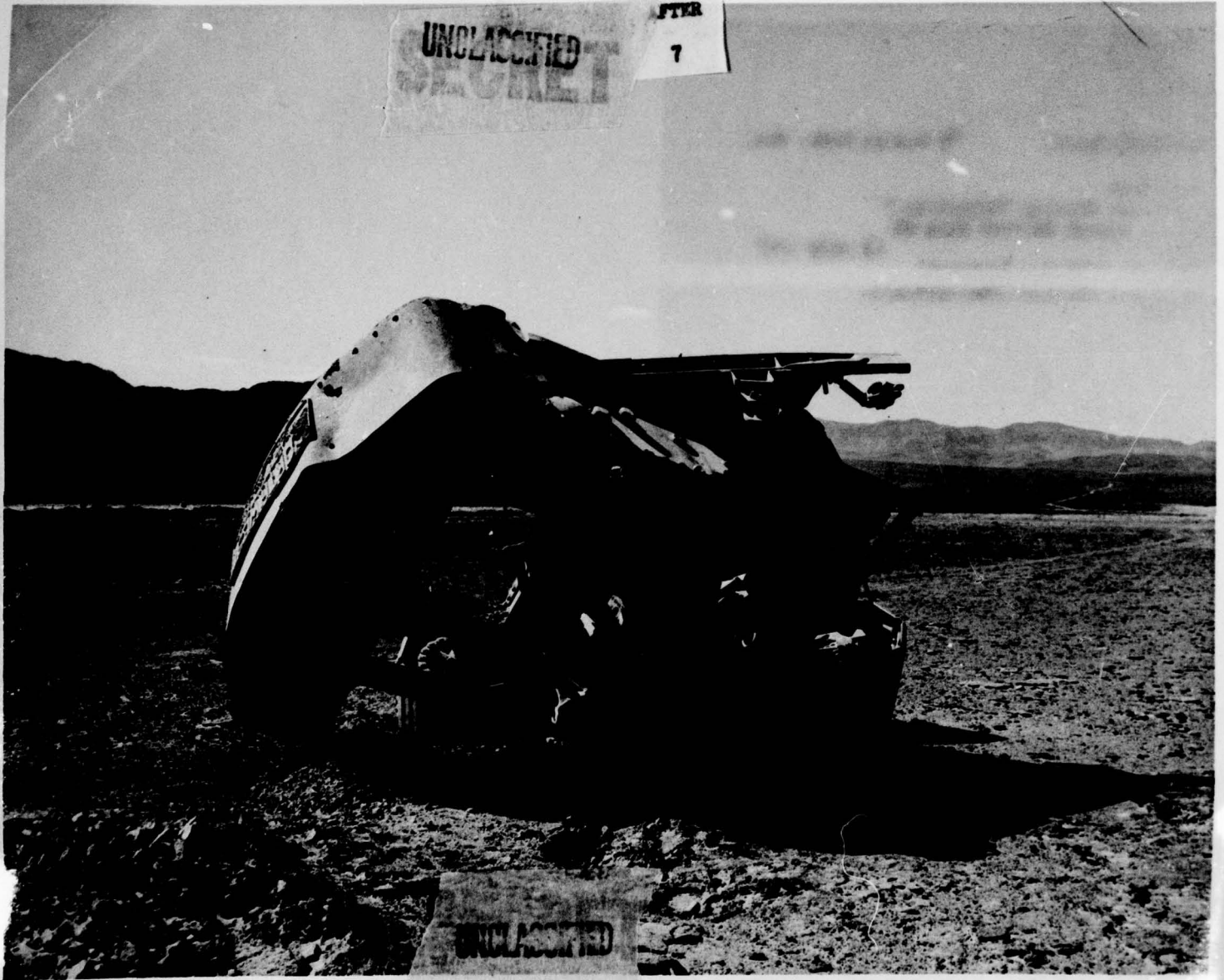


UNCLASSIFIED

AFTER

7

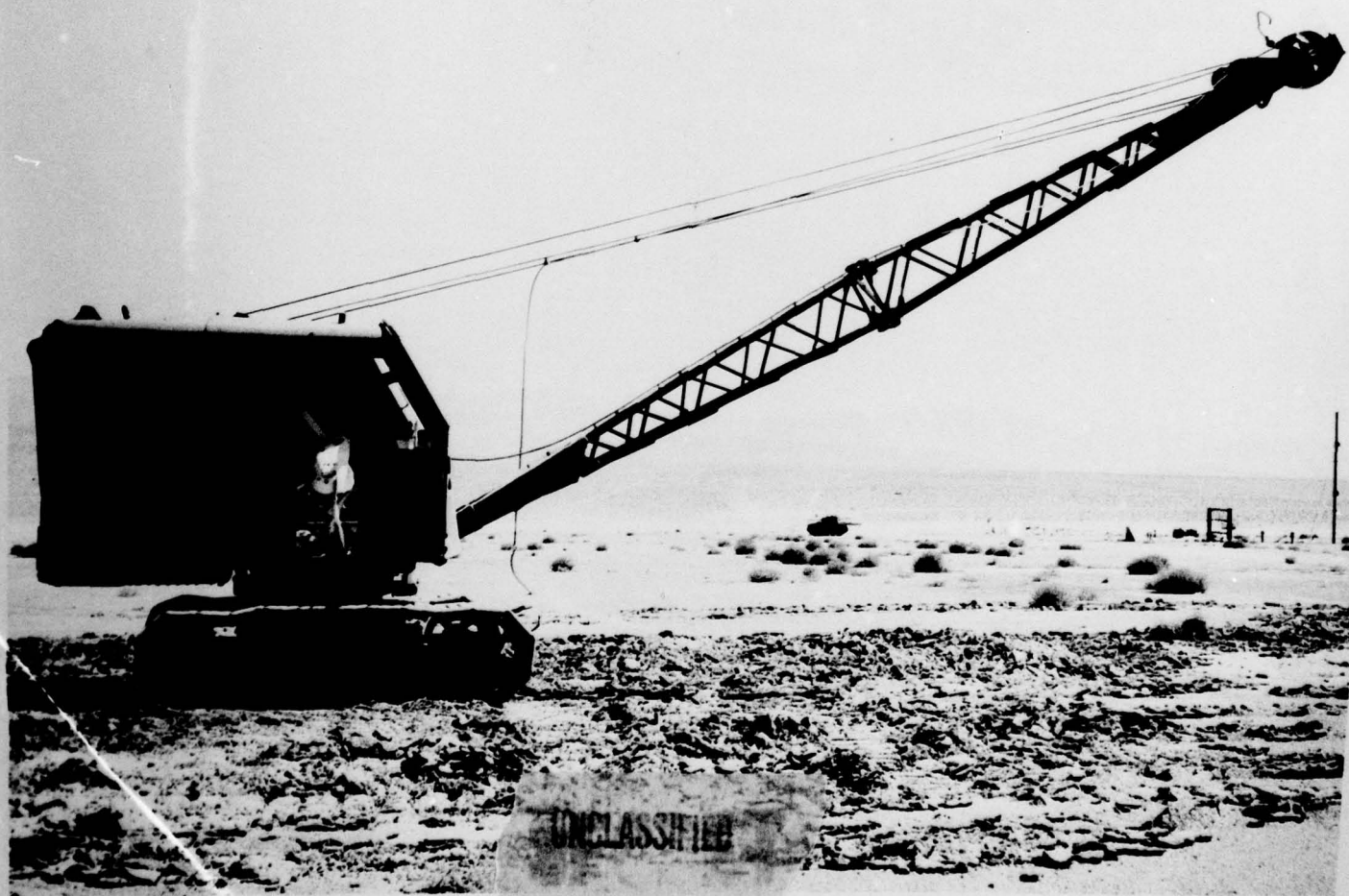
UNCLASSIFIED



BEFORE

7

~~SECRET~~  
UNCLASSIFIED



UNCLASSIFIED

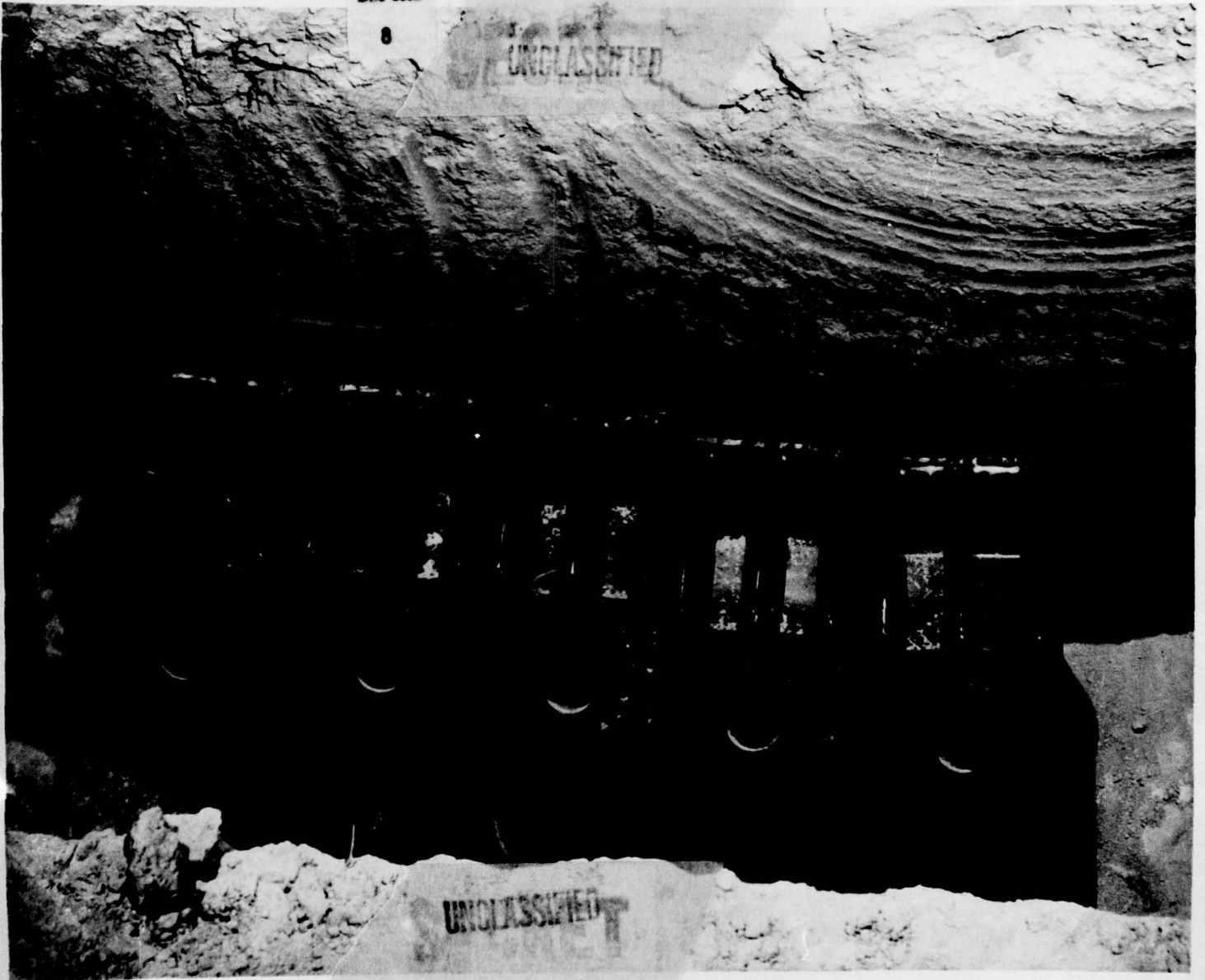


BEFORE

8

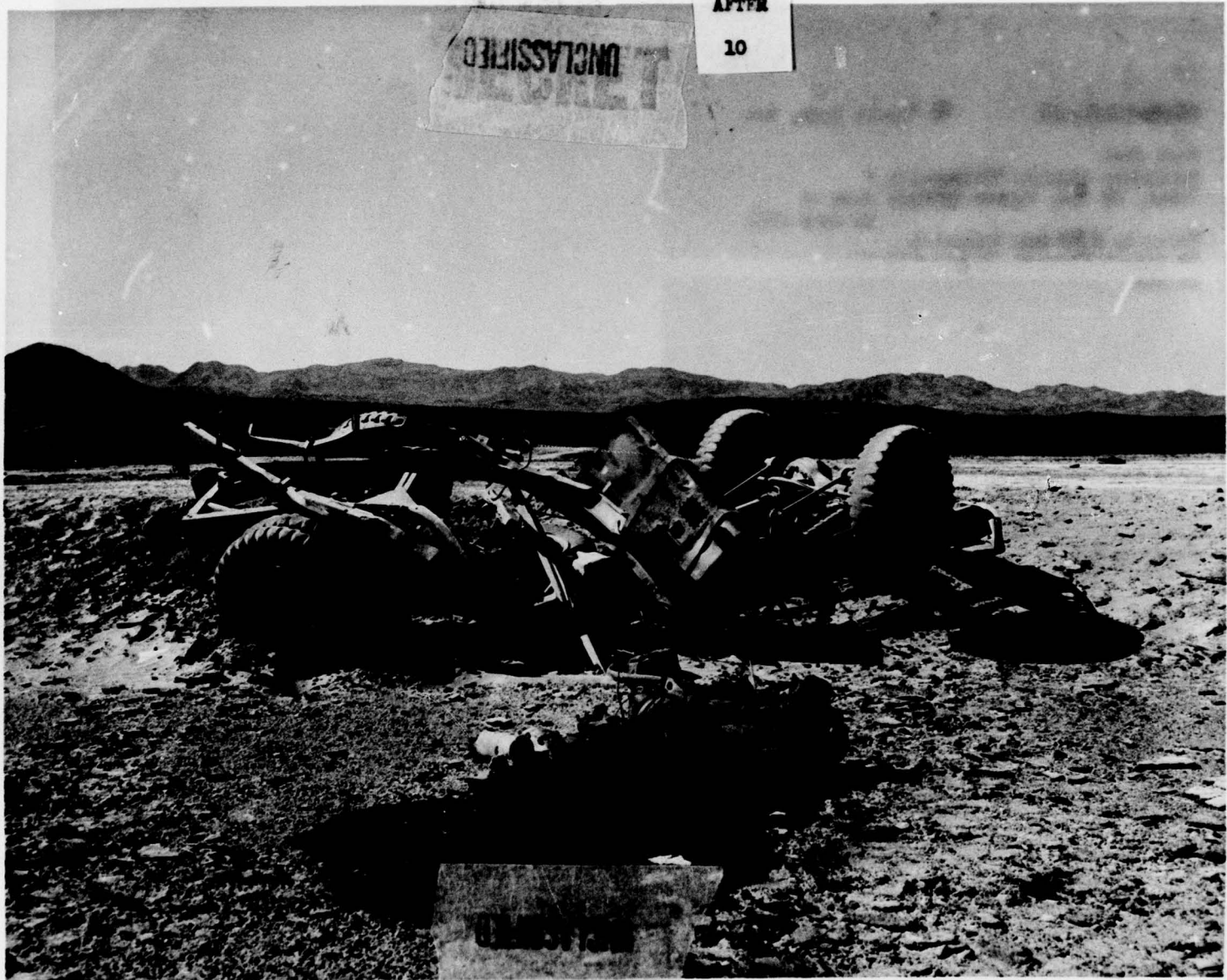
UNCLASSIFIED

UNCLASSIFIED



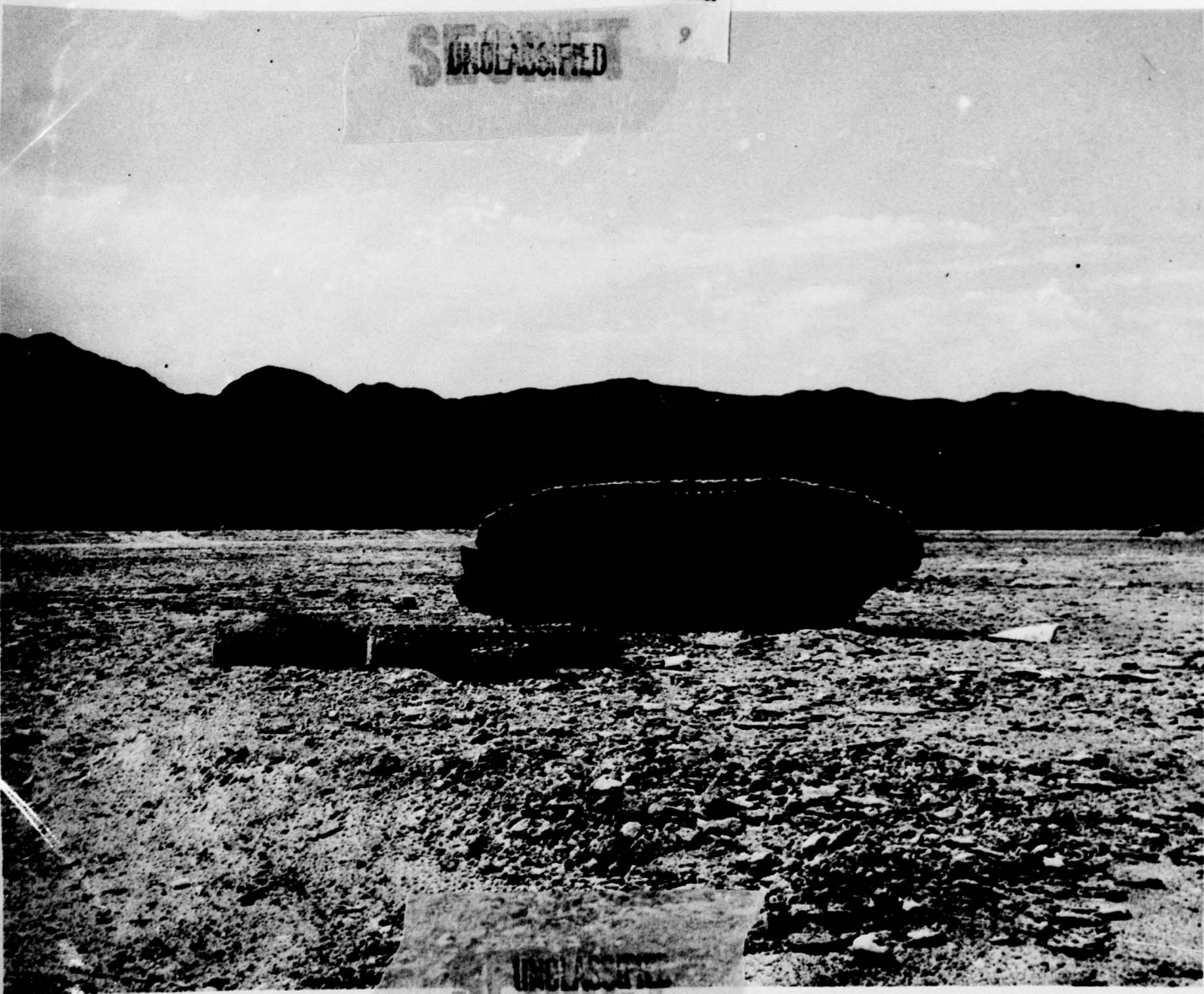
UNCLASSIFIED

AFTER  
10



AFTER

UNCLASSIFIED



SECRET



BEFORE

9

~~SECRET~~  
UNCLASSIFIED



UNCLASSIFIED

REF ID: A66086

10

**SECRET**



**UNCLASSIFIED**

AFTER

12

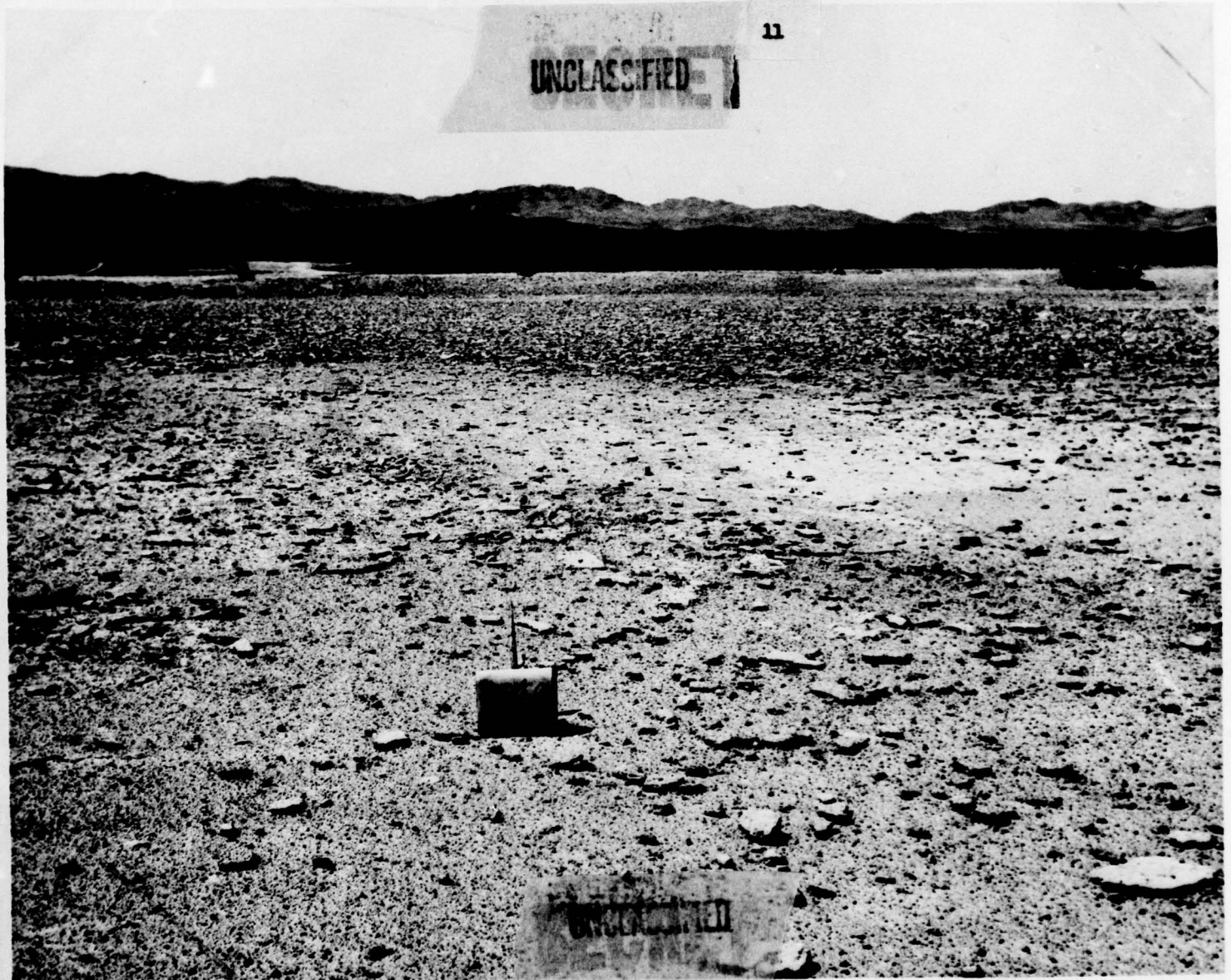




27  
AFTER

11

UNCLASSIFIED



BEFORE

11

UNCLASSIFIED



UNCLASSIFIED

5



BEFORE

12

UNCLASSIFIED



UNCLASSIFIED



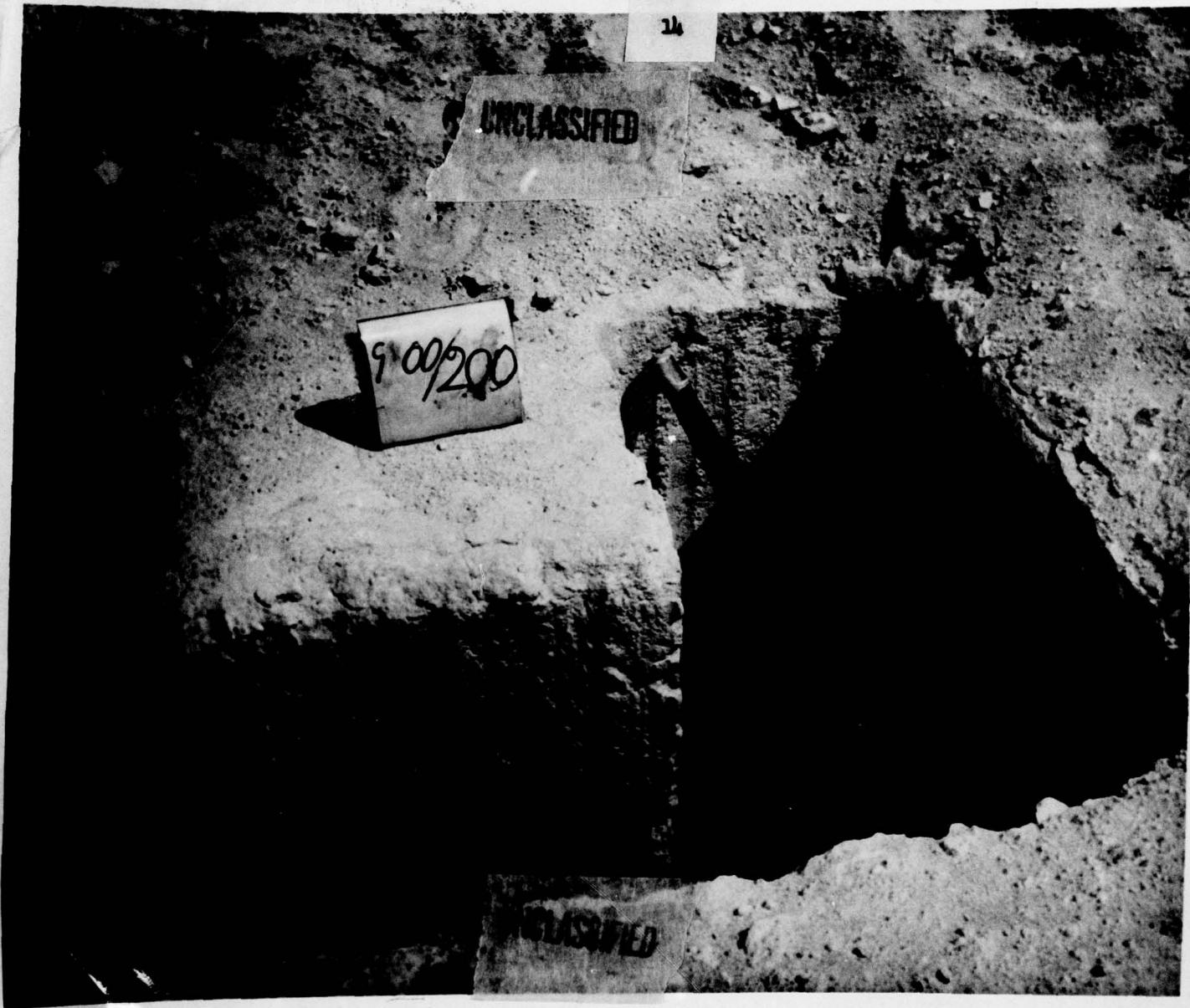
AFTER

14

UNCLASSIFIED

9'00/200

UNCLASSIFIED



AFTER

13

UNCLASSIFIED



UNCLASSIFIED

BEFORE

13

~~SECRET~~  
UNCLASSIFIED



~~SECRET~~  
UNCLASSIFIED



BEFORE

UNCLASSIFIED

14



UNCLASSIFIED

AFTER

16

UNCLASSIFIED



UNCLASSIFIED

AFTER

15

UNCLASSIFIED

UNCLASSIFIED



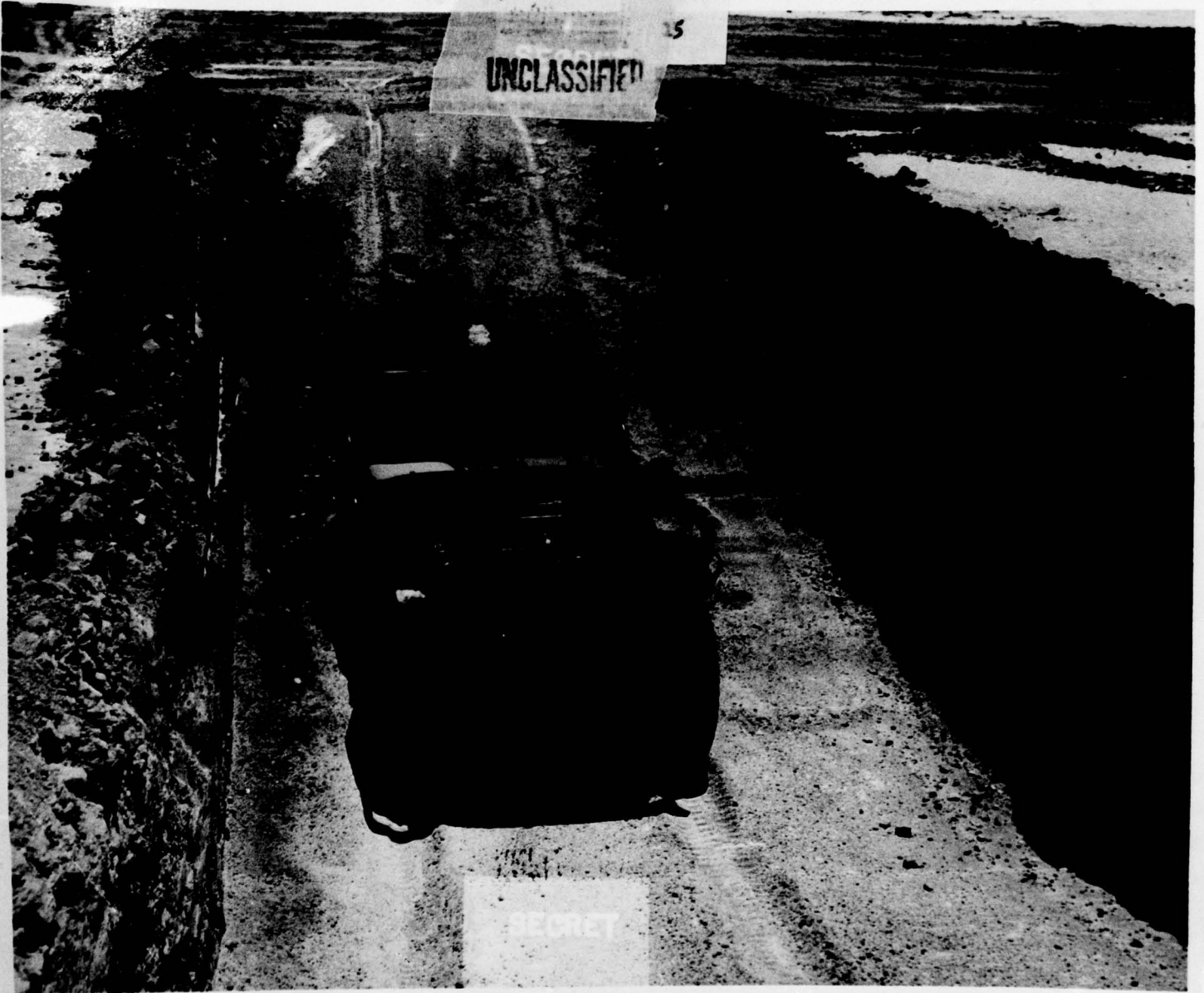


BEFORE

15

UNCLASSIFIED

SECRET



BEFORE

16

UNCLASSIFIED



UNCLASSIFIED

AFTER

18

UNCLASSIFIED



UNCLASSIFIED





UNCLASSIFIED

AFTER

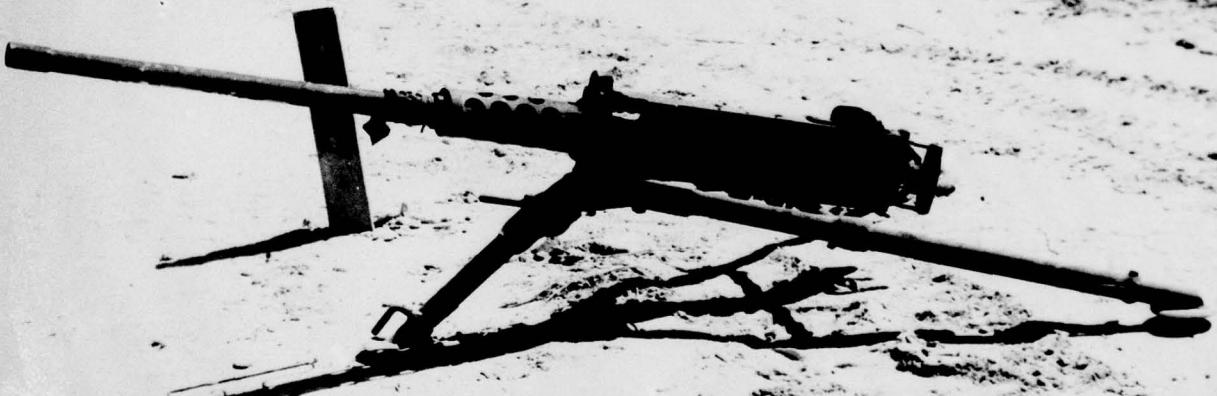
17

UNCLASSIFIED

UNCLASSIFIED  
SECRET

BEFORE

17



UNCLASSIFIED



BEFORE

18

UNCLASSIFIED



UNCLASSIFIED



AFTER

20

UNCLASSIFIED



1209/150

UNCLASSIFIED



AFTER

19

1200/100

UNCLASSIFIED



BEFORE

19

~~SECRET~~ UNCLASSIFIED



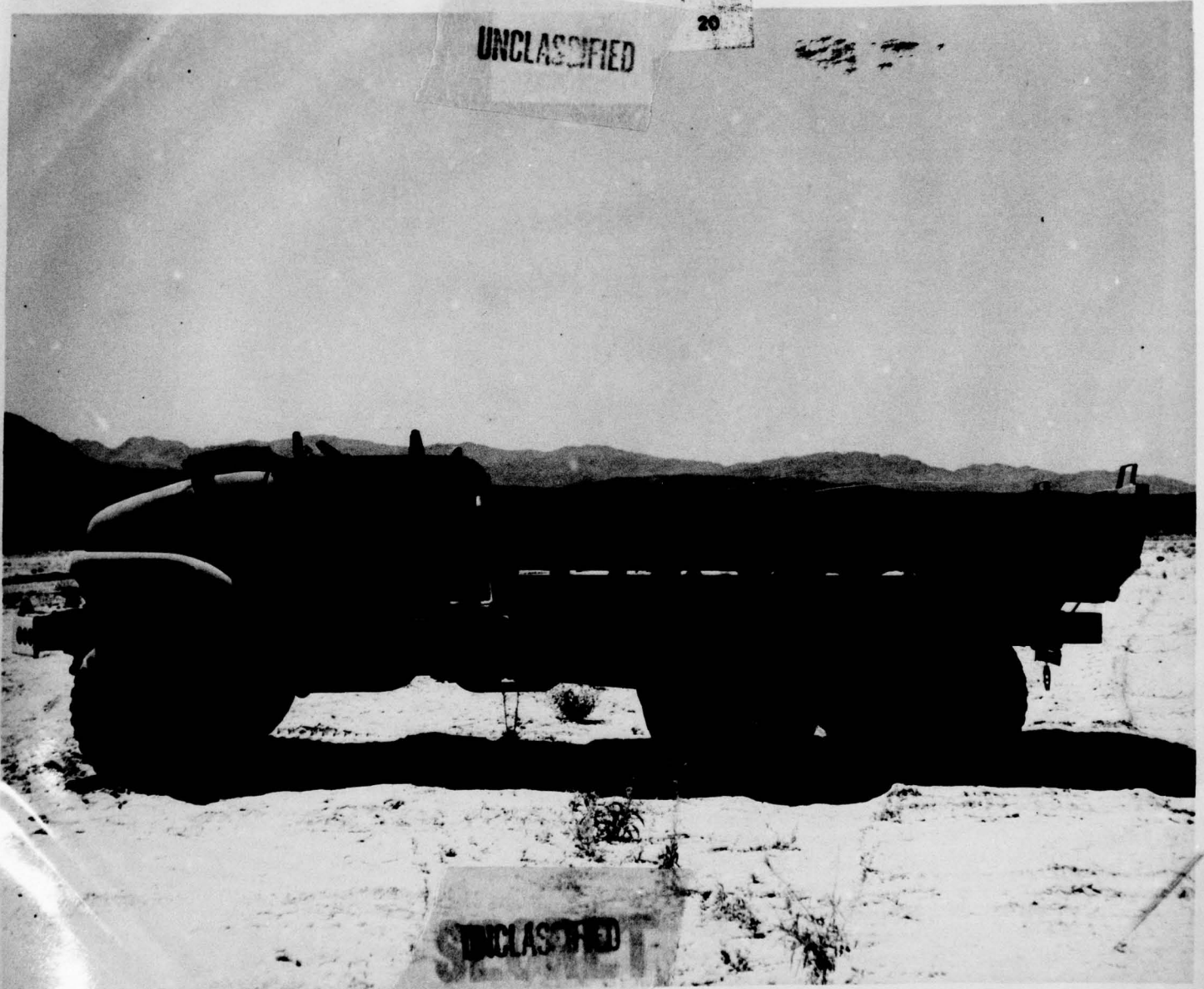
~~SECRET~~



BEFORE

20

UNCLASSIFIED



UNCLASSIFIED

AFTER

22

UNCLASSIFIED



UNCLASSIFIED



AFTER

21

UNCLASSIFIED

UNCLASSIFIED





BEFORE

21

UNCLASSIFIED



SECRET

BEFORE

22

UNCLASSIFIED

UNCLASSIFIED



AFTER

24

UNCLASSIFIED

500/0

UNCLASSIFIED





AFTER

23

SECRET  
UNCLASSIFIED



UNCLASSIFIED

BEFORE

23

~~SECRET~~  
UNCLASSIFIED



~~SECRET~~  
UNCLASSIFIED



BEFORE

24

UNCLASSIFIED

UNCLASSIFIED



AFTER

26

SECRET  
UNCLASSIFIED



UNCLASSIFIED

AFTER

25

UNCLASSIFIED

100/50

UNCLASSIFIED

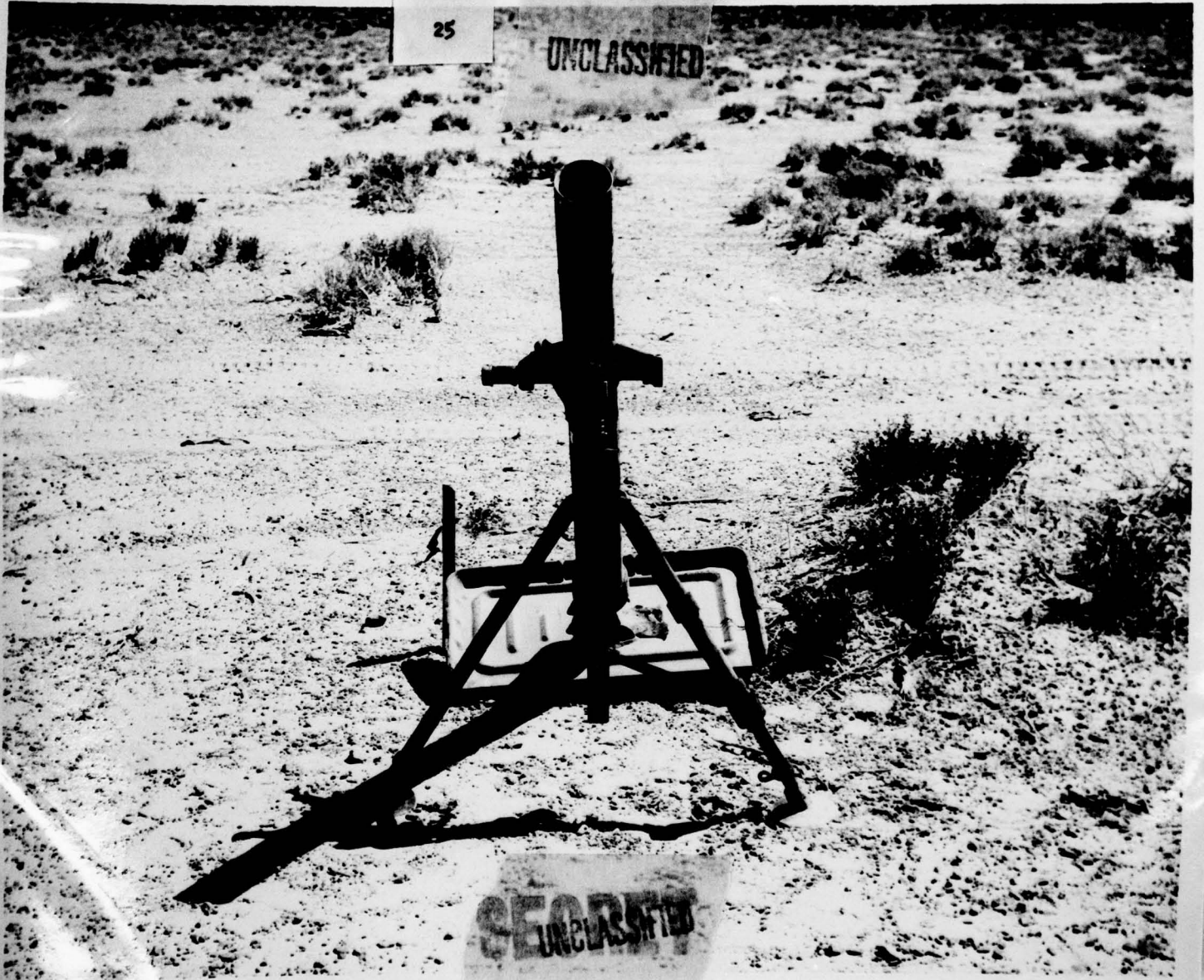




BEFORE

25

UNCLASSIFIED



UNCLASSIFIED



BEFORE

26

UNCLASSIFIED



UNCLASSIFIED

AFTER

28

UNCLASSIFIED



UNCLASSIFIED



AFTER

27

UNCLASSIFIED



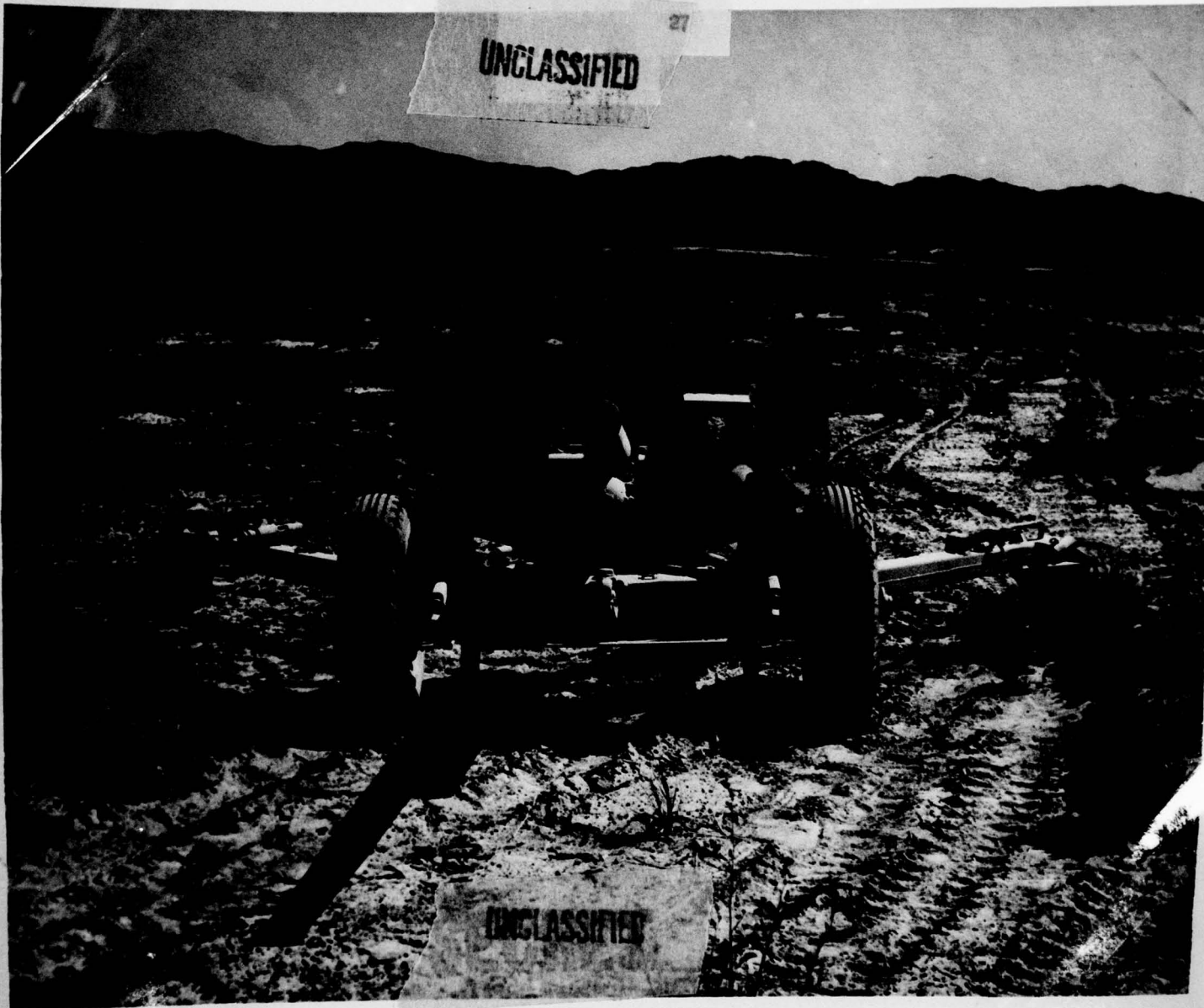
UNCLASSIFIED



BEFORE

27

UNCLASSIFIED



UNCLASSIFIED



BEFORE

20

UNCLASSIFIED



AFTER

30

UNCLASSIFIED



UNCLASSIFIED



AFTER

25

UNCLASSIFIED

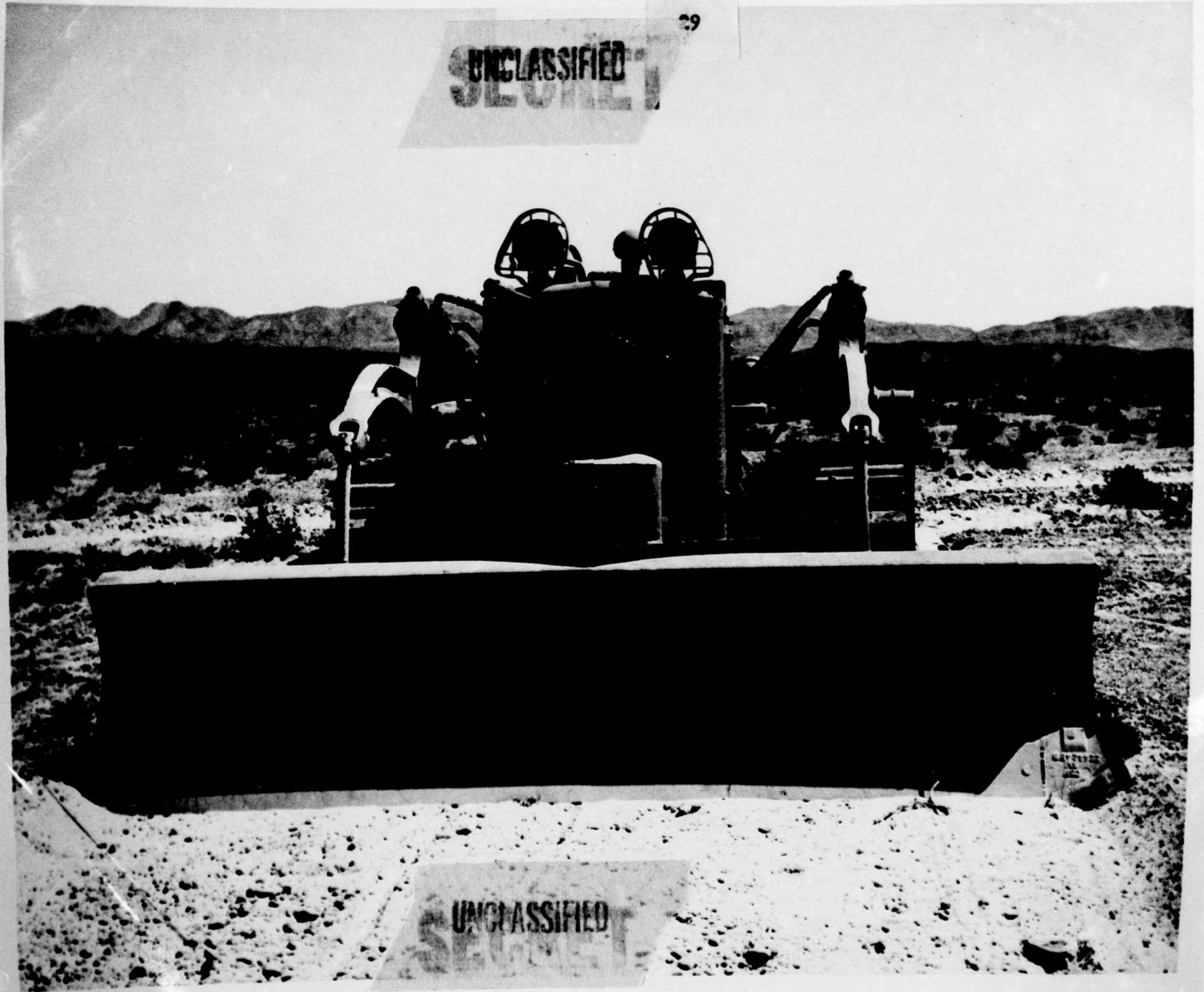


UNCLASSIFIED

BEFORE

29

UNCLASSIFIED  
SECRET

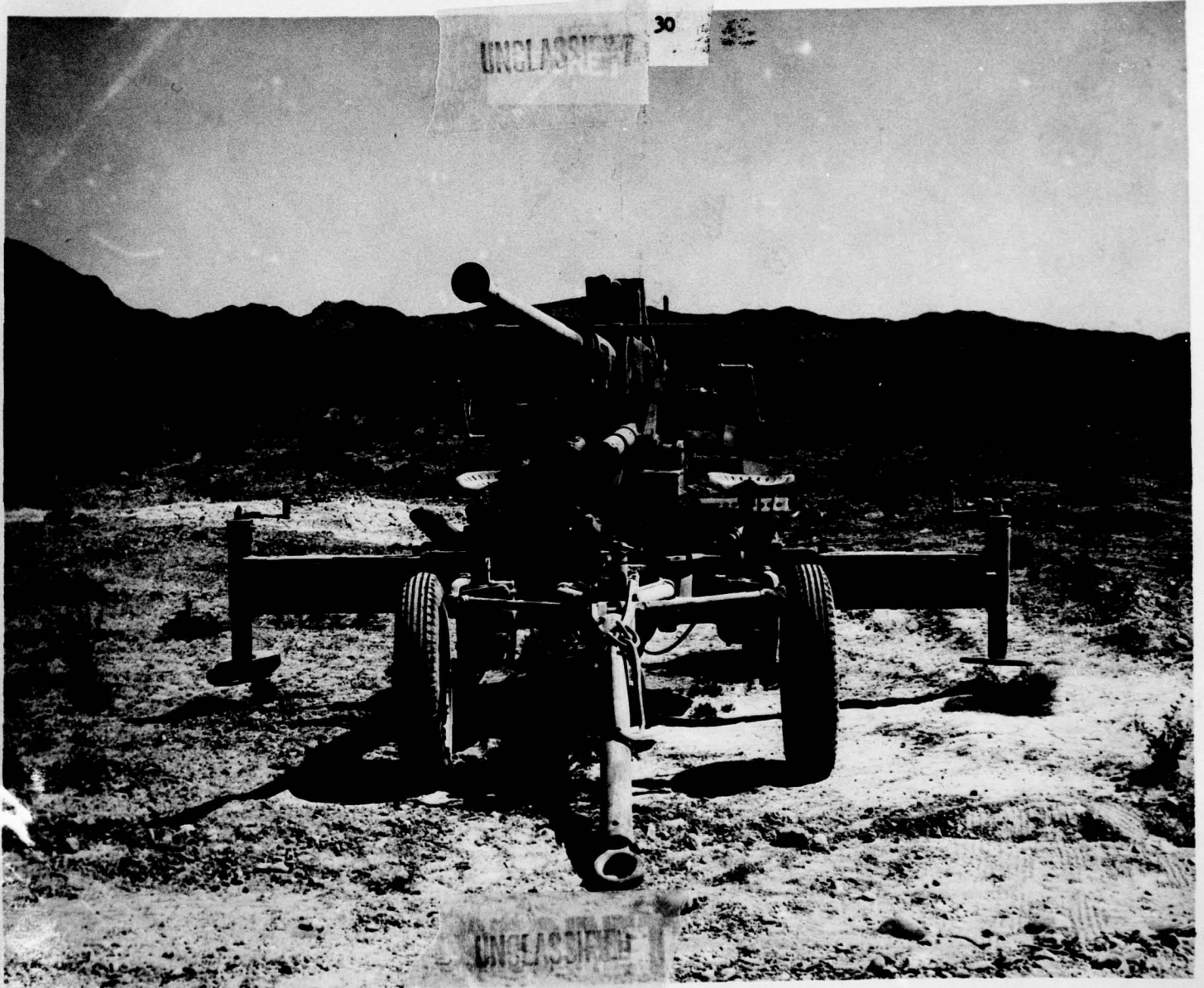


UNCLASSIFIED  
SECRET

BEFORE

30

UNCLASSIFIED



UNCLASSIFIED



AFTER

32

SECRET  
UNCLASSIFIED



UNCLASSIFIED

AD-A078 561

EXERCISE DESERT ROCK LAS VEGAS NV  
EXERCISE DESERT ROCK VII AND VIII. ANNEX L.(U)  
1957

F/6 18/3

UNCLASSIFIED

NL

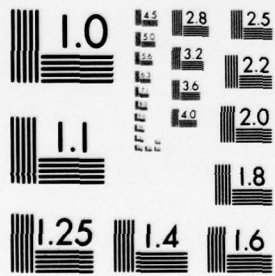
2 OF 3  
AD  
A078561



OF



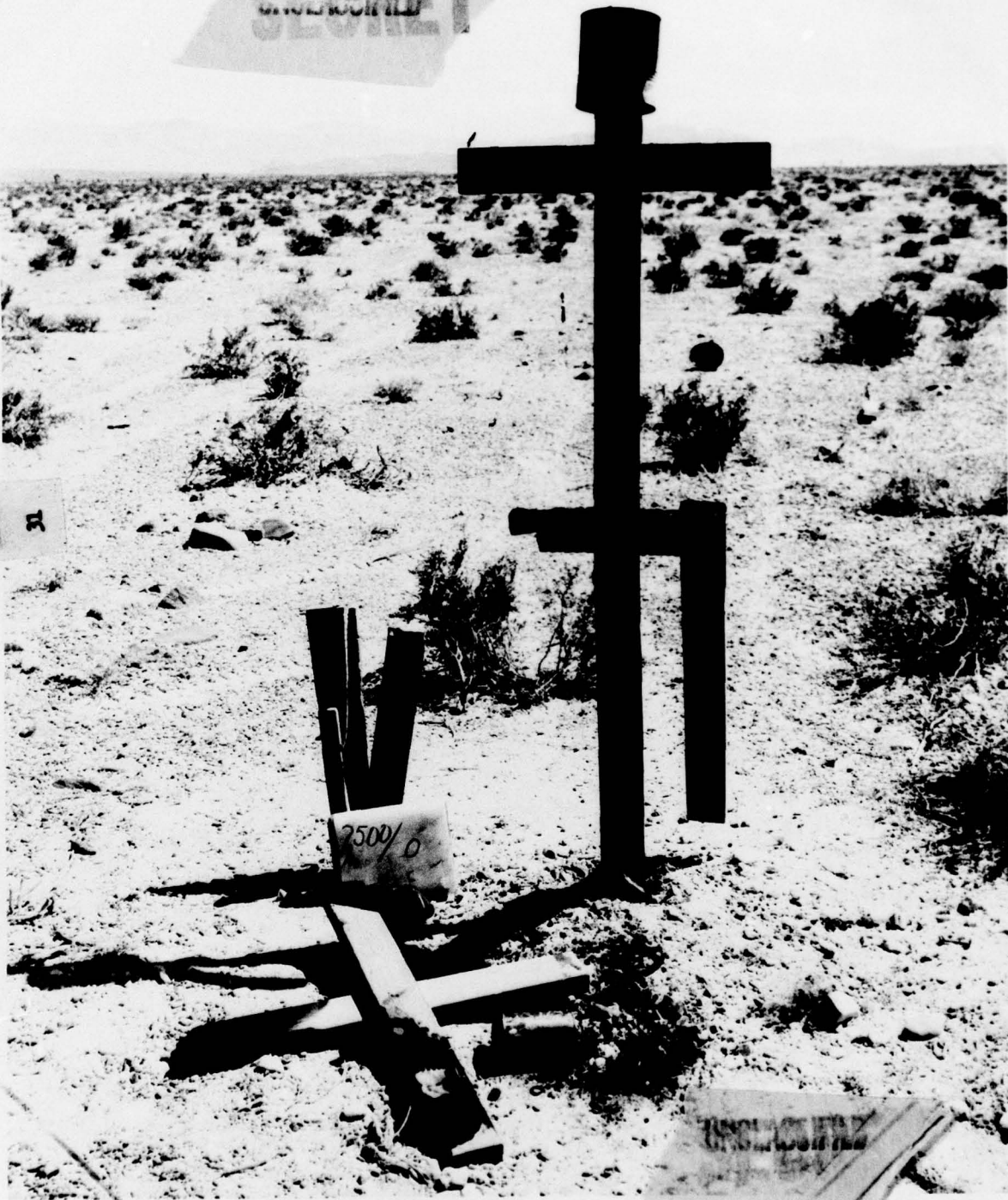
D  
078561



MICROCOPY RESOLUTION TEST CHART  
NATIONAL BUREAU OF STANDARDS-1963-A



SECRET



AFTER

31

SECRET



FOIA

31

UNCLASSIFIED

SECRET



BEFORE

32

UNCLASSIFIED



UNCLASSIFIED



UNCLASSIFIED

AFTER

36



UNCLASSIFIED

AFTER  
33

2500/300

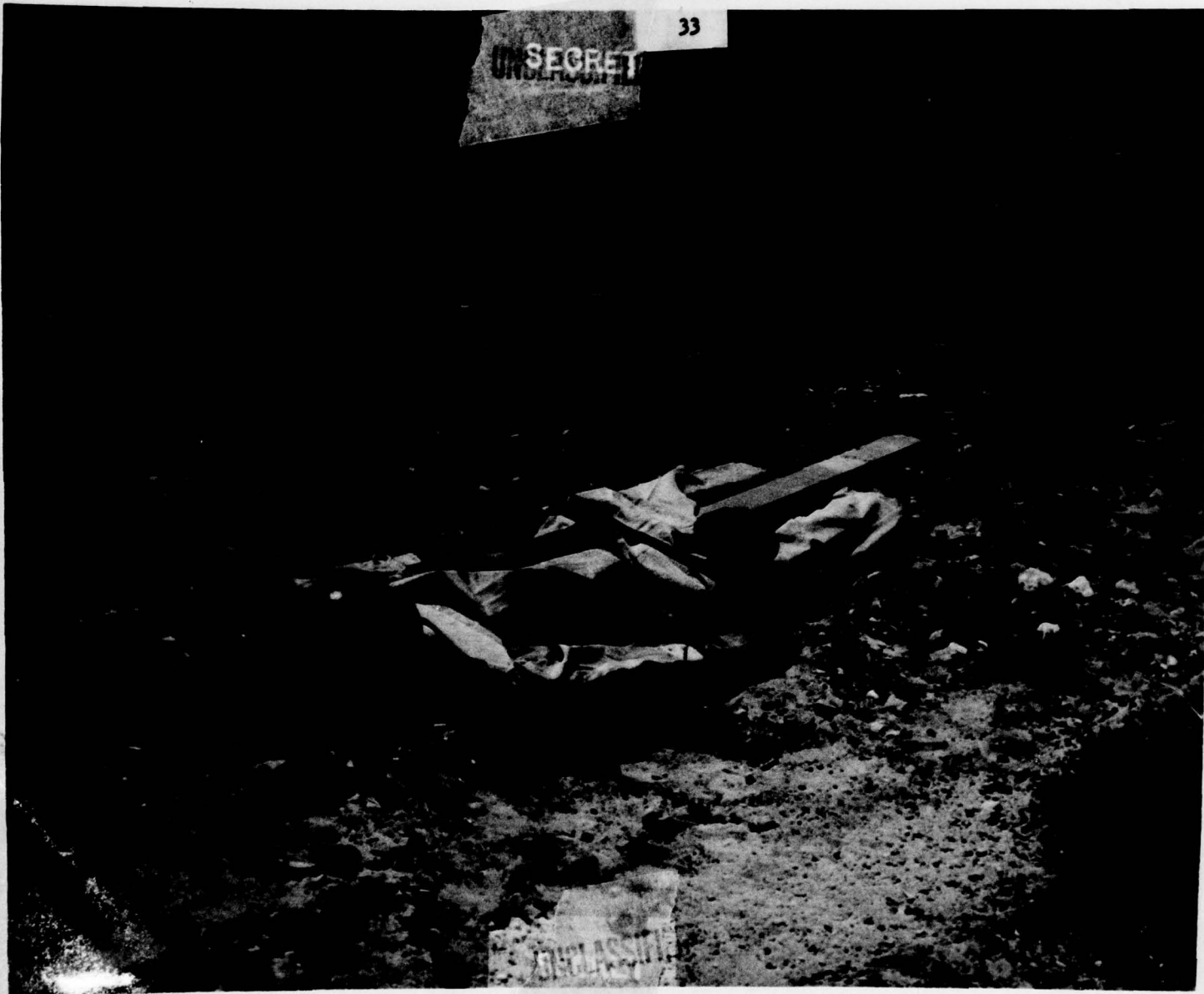


BEFORE

33

UNSECRET

UNCLASSIFIED







BEFORE

34

UNCLASSIFIED

~~SECRET~~

Technical Considerations  
Shot "SMOKY"  
(Shot Day - 31 August 1957)

Design Yield - 45 KT  
Actual Yield - 45 KT (Preliminary Report)  
Ht of Burst - 700 Feet  
Time of Burst - 0530 Hours  
Temperature - 14° C  
Air Density - 856 mb  
Elevation - 5179 Above MSL (Burst Point)  
Humidity - 31 Percent

UNCLASSIFIED

DYNAMIC PRESSURES

60 psi - 500 Yards  
40 psi - 570 Yards  
20 psi - 695 Yards  
15 psi - 745 Yards  
10 psi - 835 Yards  
5 psi - 1030 Yards  
2 psi - 1280 Yards  
1 psi - 1550 Yards

THERMAL RADIATION

60 cal/cm<sup>2</sup> - 1300 Yards  
40 cal/cm<sup>2</sup> - 1645 Yards  
30 cal/cm<sup>2</sup> - 1865 Yards  
20 cal/cm<sup>2</sup> - 2260 Yards  
10 cal/cm<sup>2</sup> - 3090 Yards  
5 cal/cm<sup>2</sup> - 4220 Yards

All computations to arrive at predicted damage was based on scaling laws and damage curves in TM 23-200, Capabilities of Atomic Weapons, exclusively.

~~SECRET~~  
UNCLASSIFIED

RESTRICTED  
Atomic Energy Act, 1946

EQUIPMENT DISPLAY AREA

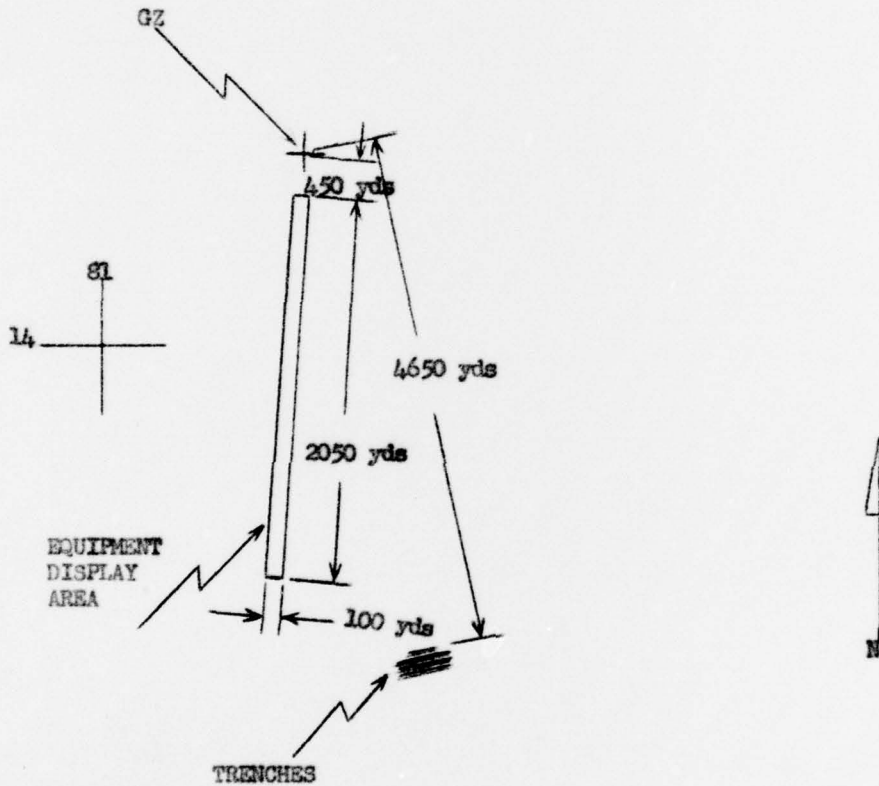
Shot "SMOKY"



~~SECRET~~  
SMOKY

UNCLASSIFIED

Map: NEVADA, 1/50000  
FRENCHMAN LAKE  
Sheet



TRENCHES  
5' Deep  
2' wide  
50 Yds long (command trench)  
725 Yds long (each observer trench)  
100' Between trenches



UNCLASSIFIED

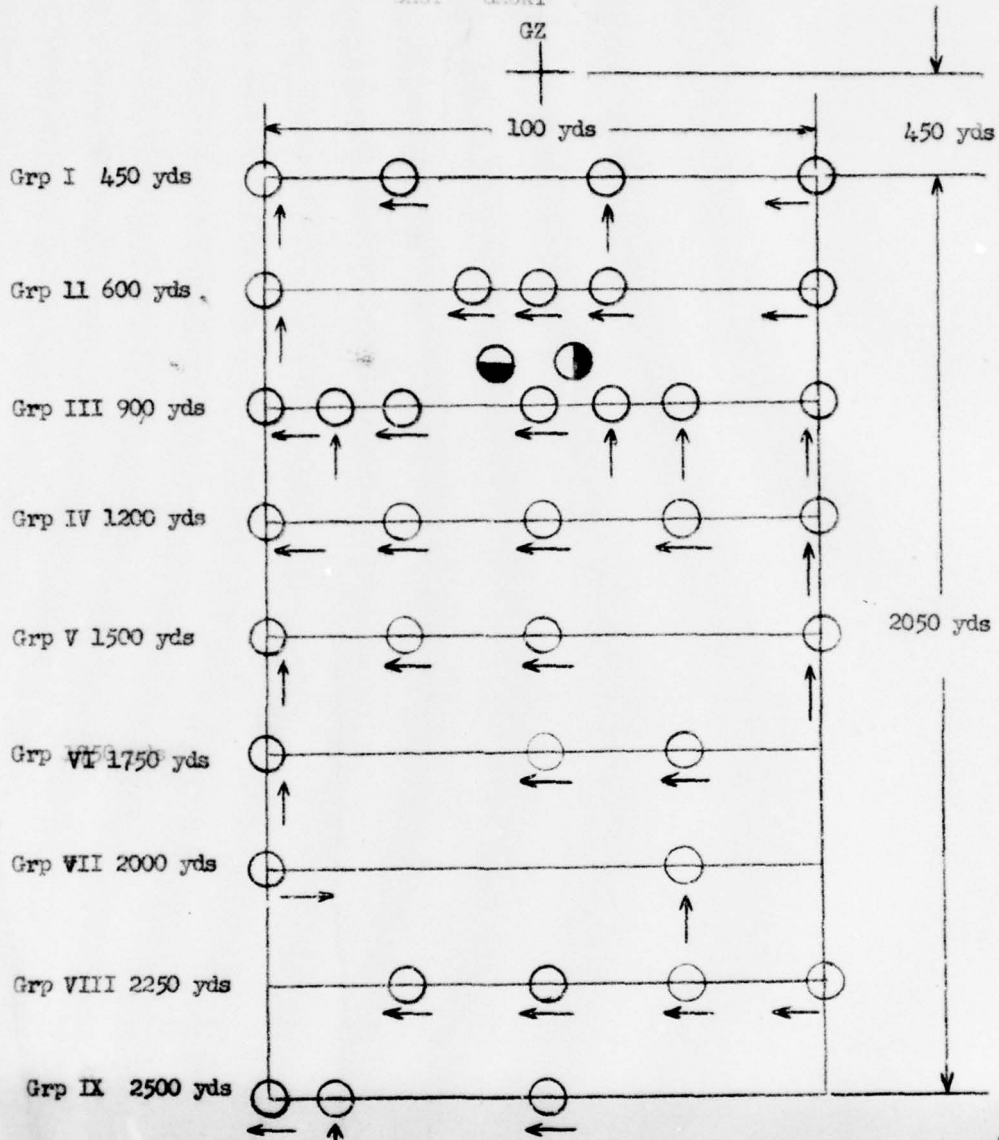
24



EQUIPMENT DISPLAY AREA (ADMINISTRATIVE)

UNCLASSIFIED

SHEET "CHECKY"



\*Includes only selected items of equipment evaluated in this report.

LEGEND:

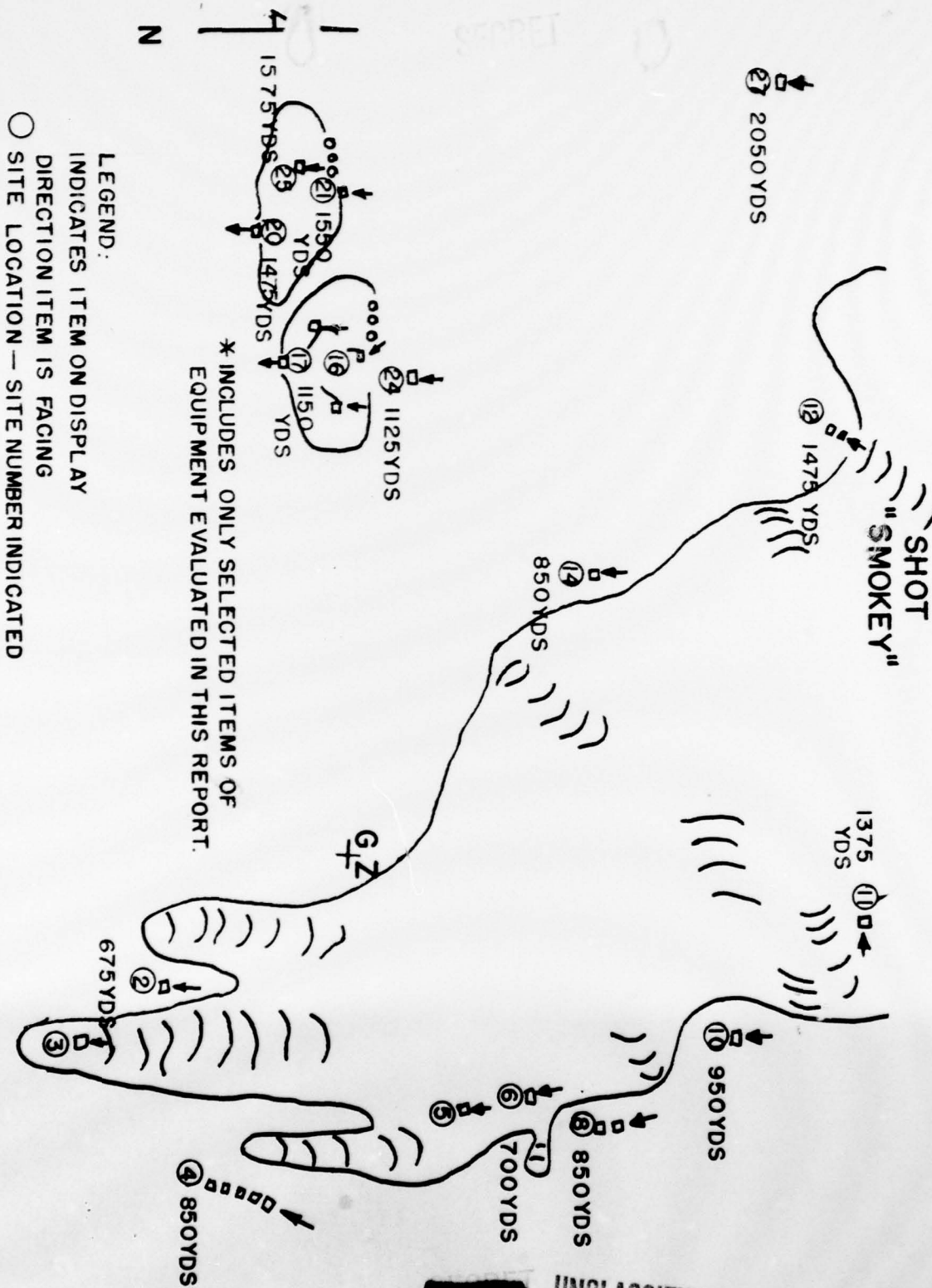
- Item on display
- ◐ Unrevetted foxhole
- ◑ Rrevetted Foxhole
- ← Item facing side on 25
- ↑ Item facing head on

UNCLASSIFIED

N

SECRET

\* EQUIPMENT DISPLAY AREA (TACTICAL)



LEGEND:  
 INDICATES ITEM ON DISPLAY  
 DIRECTION ITEM IS FACING  
 ○ SITE LOCATION — SITE NUMBER INDICATED

\* INCLUDES ONLY SELECTED ITEMS OF EQUIPMENT EVALUATED IN THIS REPORT.

UNCLASSIFIED



SECRET

EQUIPMENT DISPLAY  
(Administrative)  
Shot "SMOKY"

<u>GRP</u>	<u>ITEM</u>	<u>YARDS FROM GZ</u>	<u>PREDICTED DAMAGE</u>	<u>ACTUAL DAMAGE</u>
I	Tank, M4	450	Severe	Moderate
	Gun, 57 MM	450	Severe	Severe
	Gun, 90 MM	450	Severe	Severe
	Tank, M24	450	Severe	Severe
II	Gun, 40 MM	600	Moderate	Severe
	MG, 50 Cal	600	Moderate	Severe
	Tractor, Engr	600	Severe	Severe
	Searchlight, w/Trl&Gen	600	Severe	Severe
	Sedan	600	Severe	Severe
III	Air Compressor	900	Severe	Severe
	Truck, 2½ Ton	900	Severe	Severe
	Truck, 2½ Ton	900	Severe	Severe
	Trailer, Water	900	Severe	Severe
	Steam, Cleaner	900	Severe	Severe
	Truck, ½ Ton	900	Severe	Severe
	Tank, M4	900	Light	Light
	Foxhole, unrevetted w/ Mannequin Standing	885	Collapse/Destroy	Light/Destroy
	Foxhole, revetted w/ Mannequin Sitting	885	No Damage	Light/No Damage
	IV	Tank, M24	1200	Light
Truck, 1½ Ton		1200	Moderate	Severe
55 Gal Drum (10)		1200	Light	Light
MG 30 Cal		1200	Light	Light
Water Softener w/ Tank		1200	Moderate	Moderate
V	Mannequin (Prone)	1500	Singed	Singed
	Generator, (Small)	1500	Light	Moderate
	Sedan	1500	Moderate	Severe
	Mannequin, (Standing)	1500	Destroyed	Destroyed
VI	Truck, 1½ Ton	1750	Light	Light
	MG, 50 Cal	1750	Light	Light
	Truck, ½ Ton	1750	Light	Light
VII	Sedan	2000	Light	Light
	Truck, 1½ Ton	2000	Light	Light
VIII	Truck, 2½ Ton	2250	Light	Light
	Cans, 5 Gal full	2250	Light	None
	Generator, (Large)	2250	Light	Light
	Truck, ½ Ton	2250	Light	Light
IX	Sedan	2500	Light	Light
	Panel, Cloth	2500	Destroyed	Destroyed
	Tent, Sqd w/QM & Sig EQ.	2500	Severe	Severe

UNCLASSIFIED





~~SECRET~~

"SMOKY"

and

Equipment Display Area

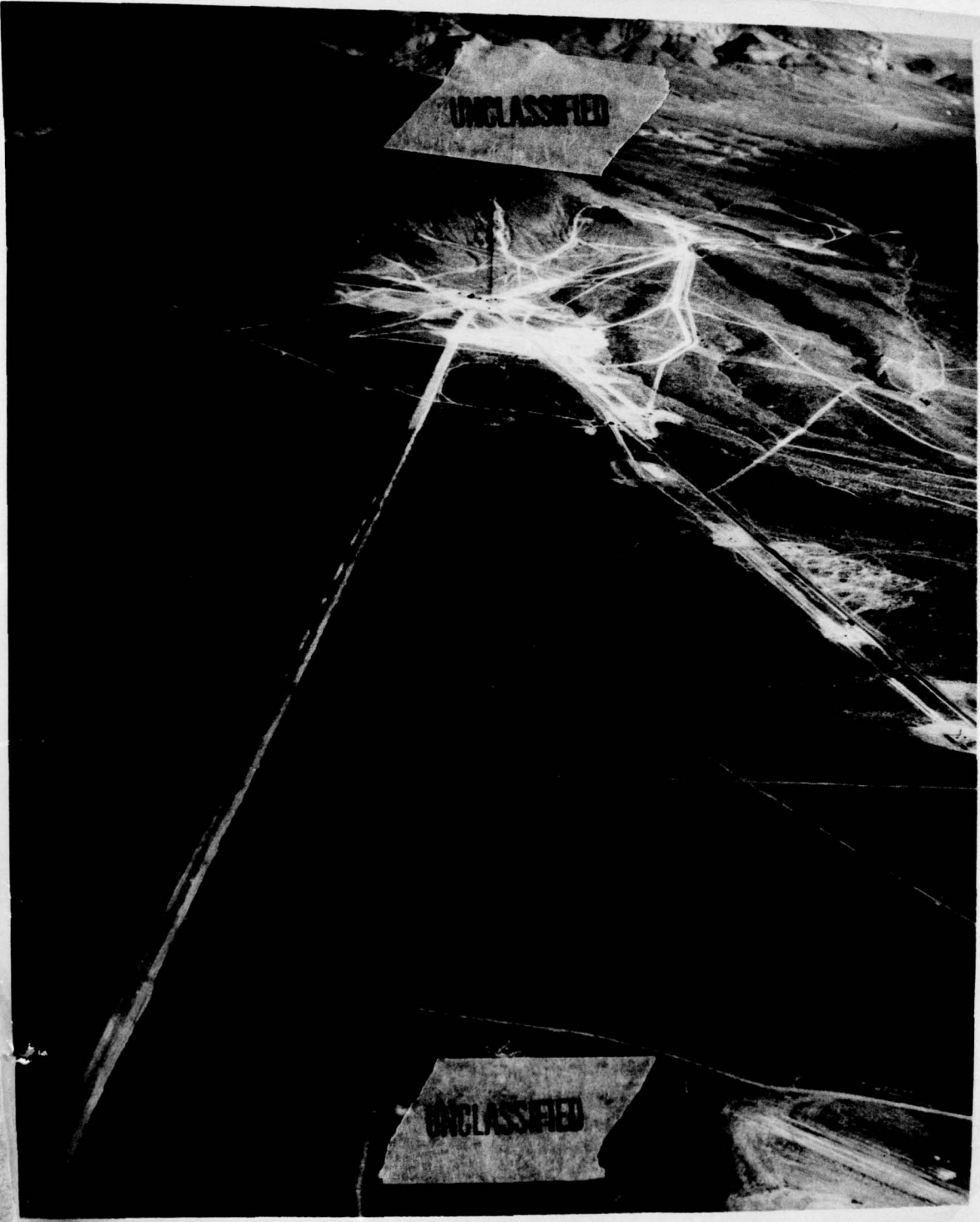
(Line of Vehicles near GZ is not part of display.

They are buses which transported Observers to the display area.)

REMOVED WHEN  
SECURE  
SEPARATE

~~SECRET~~





UNCLASSIFIED

UNCLASSIFIED

**DAMAGE COMPARISON**

**Predicted vs Actual**

**Shot "SOKY"**

~~SECRET~~

UNCLASSIFIED

DEFINITION  
OF  
DAMAGE

- LIGHT** - Damage which does not interfere with immediate military operations, but necessitates some repair to restore the items to complete military usefulness.
- MODERATE** - Damage which is sufficient to prevent any military use until some repairs are effected.
- SEVERE** - Damage whenever repair is essentially impossible without removal to a major repair facility,

UNCLASSIFIED

31

~~SECRET~~

~~SECRET~~  
Atomic Energy Act, 1946



UNCLASSIFIED

EXERCISE DESERT ROCK VII and VIII

RESTRICTED DATA

1946

SHOT: Smoky

ANTICIPATED YIELD: 45 KT

ACTUAL YIELD: 45 KT

PHOTO REF. NR.	ITEM	DISTANCE From GZ (Yards)	ORIENTATION & PROTECTION	DAMAGE CLASSIFICATION		DESCRIPTION OF ACTUAL DAMAGES
				PREDICTED	ACTUAL	
1	Tank, M-4	450	Head on, surface	Severe	Moderate	Tube blown off turret; tank displaced about 40 feet; tank appeared intact otherwise.
2	Gun, 57mm	450	Side on, surface	Severe	Severe	Wheels and operating handles blown off; one spade bent out of position; displaced 45 yards.
3	Gun, 90mm	450	Head on, surface	Severe	Severe	Destroyed; one wheel missing - remaining torn apart; outrigger leg blown off and the other distorted; displaced 100 yards; tube and part of mechanism displaced 50 yards further away from carriage.
4	Tank, M-24	450	Side on, surface	Severe	Severe	Track blown off and found in 4 parts within a 50 yard radius; tank overturned; bogie wheel bent out of line; drive sprocket bent out of line; tank turret blown off and displaced 100 yards from tank; gun tube torn loose from turret and laying 20 yards away; tank displaced 15 yards.
5	Machine gun, cal 50	600	Side on, surface	Severe	Severe	Torn apart; cradle found 100 yards away in original position.

UNCLASSIFIED

UNCLASSIFIED

SECRET  
APR 1966

PHOTO REF. NR.	ITEM	DISTANCE From GZ (Yards)	ORIENTATION & PROTECTION	DAMAGE CLASSIFICATION		DESCRIPTION OF ACTUAL DAMAGES
				PREDICTED	ACTUAL	
6	Tractor, Engineer full track	600	Side on, surface	Severe	Severe	Tractor tipped upside down; blade torn off; hydraulic system torn apart; track broken in pieces; tractor displaced 10 yards.
7	Gun, 40mm	600	Head on, surface	Moderate	Severe	Torn apart and scattered; wheels ripped off main carriage; barrel not located; portions of gun displaced 90 yards
8	Search Light w/trailer and generator	600	Side on, surface	Severe	Severe	Torn completely apart; scattered over a 50 yard radius; generator engine and armature laying 40 yards from initial point; trailer less wheels found 100 yards from initial point completely destroyed.
9	Sedan, 5 passenger	600	Side on, surface	Severe	Severe	Completely blown apart and scattered throughout the area.
10	Air compressor, portable	900	Side on, surface	Severe	Severe	Only tank located; controls completely torn off or extensively damaged; displaced 100 yards.
11	Truck, 2 1/2 ton Commercial	900	Head on, surface	Severe	Severe	Cab crushed in as if an object had hit it as well as by blast; paint blistered; carburetor, air cleaner, hose, wiring and distributor melted; displaced 80 yards.

UNCLASSIFIED







~~XXXXXXXXXX~~

UNCLASSIFIED

PHOTO REF. NR.	ITEM	DISTANCE From GZ (Yards)	ORIENTATION & PROTECTION	DAMAGE CLASSIFICATION		DESCRIPTION OF ACTUAL DAMAGES
				PREDICTED	ACTUAL	
22	Machine gun, cal 30	1200	Side on, surface	Light	Light	Tripod displaced 20 yards and disconnected from gun; barrel and mechanism appeared in good condition except for a little scorching.
23	Tanks, water softener	1200	Upright, surface	Moderate	Moderate	Tanks scattered and dented; pipe connections broken off.
24	Mannequin	1500	Head on, face down, surface	Singed	Singed	Helmet blown 2 yards away; left shoulder of shirt burned; right shoulder of shirt scorched and shredded; canteen cover ripped a little from blast also scorched; web belt blackened; left hip of trousers slightly burned and appeared ripped a little from blast effects.
25	Generator, skid mounted	1500	Side on, surface	Light	Moderate	Displaced 5 yards; paint scorched on GZ side; side panels dented on GZ side; panel board loose; engine breather hose off; wiring for distributor burned and laying along side of unit.

~~XXXXXXXXXX~~  
UNCLASSIFIED

~~XXXXXXXXXX~~  
UNCLASSIFIED

~~RESTRICTED DATA~~  
~~UNCLASSIFIED~~  
UNCLASSIFIED

~~RESTRICTED DATA~~  
~~UNCLASSIFIED~~  
UNCLASSIFIED

PHOTO REF. NR.	ITEM	DISTANCE From GZ (Yards)	ORIENTATION & PROTECTION	DAMAGE CLASSIFICATION		DESCRIPTION OF ACTUAL DAMAGES
				PREDICTED	ACTUAL	
26	Sedan, 5 passenger	1500	Side on, surface	Moderate	Severe	Vehicle tipped upside down; displaced 5 yards; all windows blown out; top crushed in; hood crushed in; paint blistered.
27	Mannequin	1500	Upright, head on, surface	Destroyed	Destroyed	Fatigues tattered and blown apart; 2x4 scorched; face piece to gas mask showed signs of heat but was not burned; displaced up to 50 yards in all directions away from blast; helmet blackened on front side; web belt blackened and shredded from blast; first aid pouch shredded.
28	Truck, 1/2 ton Commercial	1750	Head on, surface	Light	Light	Paint blistered; seat blown out; cab crushed slightly; stakes blown off; truck displaced 3 yards; windshield and right door window blown out; exhaust pipe hanging down.
29	Machine gun, cal 50	1750	Side on, surface	Light	Light	Tipped over sideways; a little blistering of exterior.
30	Truck, 1/4 ton	1750	Side on, surface	Light	Light	Tipped over sideways; blackened; windshield blown off with frame about 75 yards away.

37

~~RESTRICTED DATA~~  
UNCLASSIFIED

[REDACTED]

UNCLASSIFIED

PHOTO REF. NR.	ITEM	DISTANCE From GZ (Yards)	ORIENTATION & PROTECTION	DAMAGE CLASSIFICATION		DESCRIPTION OF ACTUAL DAMAGES
				PREDICTED	ACTUAL	
31	Truck, 1 1/2 ton, commercial	2000	Head on, surface	Light	Light	Dented top and door on GZ side; hood blown open.
32	Sedan, 5 passenger	2000	Side on	Light	Light	Rear glass shattered; top dented; paint on GZ side blistered; back end displaced 1 yard.
33	Truck, 2 1/2 ton, commercial	2250	Side on, surface	Light	Light	Paint scorched, GZ door blown open and glass shattered; stakes on GZ side bent inward; hood blown off.
34	Cans, gas, 5 gal	2250	Edge on, surface	Light	None	Cans tipped over.
35	Generator, large, skid mounted	2250	Side on, surface	Light	Light	Door on GZ side dented; paint scorched.
36	Truck, 1/4 ton	2250	Side on, surface	Light	Light	Hood blown open; paint scorched; seats scorched and one corner burned.

[REDACTED]

UNCLASSIFIED

[REDACTED]

[REDACTED]



~~SECRET~~  
UNCLASSIFIED

PHOTO REF. NR.	ITEM	DISTANCE From GZ (Yards)	ORIENTATION & PROTECTION	DAMAGE CLASSIFICATION		DESCRIPTION OF ACTUAL DAMAGES
				PREDICTED	ACTUAL	
37	Sedan, 5 passenger	2500	Head on, surface	Light	Light	Windshield shattered; paint blistered; top dented.
38	Panel, cloth	2500	Head on, surface	Destroyed	Destroyed	Shredded; scorched; frame broken; about 1/2 of cloth left.
39	Tent, equipt, and signal equip.	2500	Side on, Surface	Severe	Severe	Tent blown 100 feet from stakes; evidence of burning and shredding; cot's spot burned and blown 50 feet; duplicating machine burned and melted; gas cans slightly scorched; cosmic equip scorched; canvas covers scorched; (Little fires within tent area was sufficient in most cases to severely damage all equipment except holes, cans and drums.)
40	Tank, M-4	575	Side on, partial defilade	Moderate	Light	Top hatch blown off; displaced slightly; paint burned.
41	Gun, 57mm (AT)	825	Side on, surface	Light	Light	One shield blown off; paint blistered; turned around.

~~SECRET~~  
UNCLASSIFIED

~~SECRET~~  
UNCLASSIFIED

UNCLASSIFIED

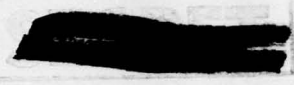
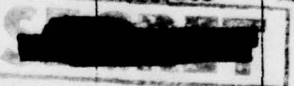


PHOTO REF. NR.	ITEM	DISTANCE From GZ (Yards)	ORIENTATION & PROTECTION	DAMAGE CLASSIFICATION		DESCRIPTION OF ACTUAL DAMAGES
				PREDICTED	ACTUAL	
42	Truck, 3/4 ton	850	Side on, surface	Light	Severe	Blown 25 yards; frame and body bent and twisted; paint blistered.
43	Generator, trailer mounted	850	Side on, surface	Light	Light	Tipped over; paint blistered.
44	Truck, 1/2 ton	850	Side on, partial defilade	Light	Severe	Demolished.
45	Search-light, trailer mounted	850	Side on, partial defilade	Moderate	Severe	Tripped off trailer; light twisted and torn apart; trailer suffered light damage.
46	Gun, 57mm (AT)	850	Side on, partial defilade	Light	Light	Turned around in place; paint blistered; one half of shield blown off.
47	Tank, M-4	650	Side on, surface	Moderate	Light	Paint blistered; fenders dented; displaced 25 feet.
48	Howitzer, 75mm, pack	700	Side on, surface	Moderate	Moderate	Paint blistered; tipped over; carriage out of alignment.

40



UNCLASSIFIED

RESTRICTED DATA  
 Atomic Energy Act 1946

[REDACTED]

UNCLASSIFIED

PHOTO REF. NR.	ITEM	DISTANCE From GZ (Yards)	ORIENTATION & PROTECTION	DAMAGE CLASSIFICATION		DESCRIPTION OF ACTUAL DAMAGES
				PREDICTED	ACTUAL	
49	Truck, 1/4 ton	850	Side on.	Moderate	Moderate	Glass shattered; hood blown open; paint scorched and blistered; top frame bent and burned.
50	Truck, 1 1/2 Ton	850	Side on	Moderate	Severe	Displaced 25 yds and turned around; glass shattered; hood and bed stakes blown off.
51	Sedan, 5 passenger	950	Side on.	Moderate	Severe	Frame and body twisted and tangled; displaced 25 yards, hood twisted and mangled.
52	Carrier M 290	1375	Side on	Light	Light	Paint scorched on GZ side, displaced about 2 feet, few dents in frame.
53	Trucks 1/2 ton w/radio	1475	Side on.	None	Light	Windshield shattered; hood blown open; radio dislodged but still on mount.
54	Truck, 1 1/2 ton Commercial	1475	Side on.	None	Light	Glass shattered; hood blown off; door and bed bent.
55	LVT, Marine	890	Side on.	Light	Moderate	Track blown off; rolled 90 yards; hatches and doors blown off.

41

[REDACTED]

UNCLASSIFIED

[REDACTED] UNCLASSIFIED DATA [REDACTED]



UNCLASSIFIED

~~SECRET~~

~~SECRET~~

PHOTO REF. NR.	ITEM	DISTANCE From GZ (Yards)	ORIENTATION & PROTECTION	DAMAGE CLASSIFICATION		DESCRIPTION OF ACTUAL DAMAGES
				PREDICTED	ACTUAL	
56	Gun, 57 mm (AT)	1150	Side on, dug in tactically	Light	None	Paint scorched; trails half buried with dirt.
57	Machine Gun, 30 Cal	1150	Side on, dug in tactically	Light	Light	Paint blistered; rear sight bent; tripod blown 50 feet, gun blown 10 feet.
58	Commo Equip	1150	Side-on	Light	Moderate	Radios: Microphone shattered; dial broken; radio blown into hole. Telephones no visible damage; blown into hole.
59	106 mm Recoilless Rifle w/ Mannequin	1150	Side on, dug in tactically	Light/destroyed	Light/destroyed	Muzzle moved to the right; paint scorched; mannequin disintegrated; bits of cloth noticed 10 to 50 yards from original position.
60	B.A.R.	1475	Side on, dug in tactically	None	None	Displaced 3 feet.
61	Gun, 57mm (AT)	1550	Side on, dug in tactically	None	None	Paint scorched.
62	Truck, 1/2 ton	1850	Side on, partial defilade	None	Light	Paint scorched; seat scorched; hood blown open and bent.

42

UNCLASSIFIED

**UNCLASSIFIED**

~~XXXXXXXXXX~~

PHOTO REF. NR.	ITEM	DISTANCE From GZ (Yards)	ORIENTATION & PROTECTION	DAMAGE CLASSIFICATION		DESCRIPTION OF ACTUAL DAMAGES
				PREDICTED	ACTUAL	
63	Tank M4, w/mannequin, standing in drivers hatch	1125	Side on, hull defilade	Light/destroyed	Light/destroyed	Paint on tank scorched; mannequin blown out of hatch and scattered.
64	Tank M48, w/mannequin standing in turret	1575	Side on, hull defilade	None/destroyed	Light/destroyed	Paint on tank scorched; mannequin destroyed by burning and scattered.
65	Mortar, 81 mm	2090	Dug in	None	None	None

43

**UNCLASSIFIED**

~~XXXXXXXXXX~~

~~XXXXXXXXXX~~  
EXTRACTED DATA  
~~XXXXXXXXXX~~  
Energy Act 1946

FRE - SHOT

and

POST - SHOT

PHOTOS

Shot "SOXY"



AFTER

2

UNCLASSIFIED

GP. 1  
SECRET

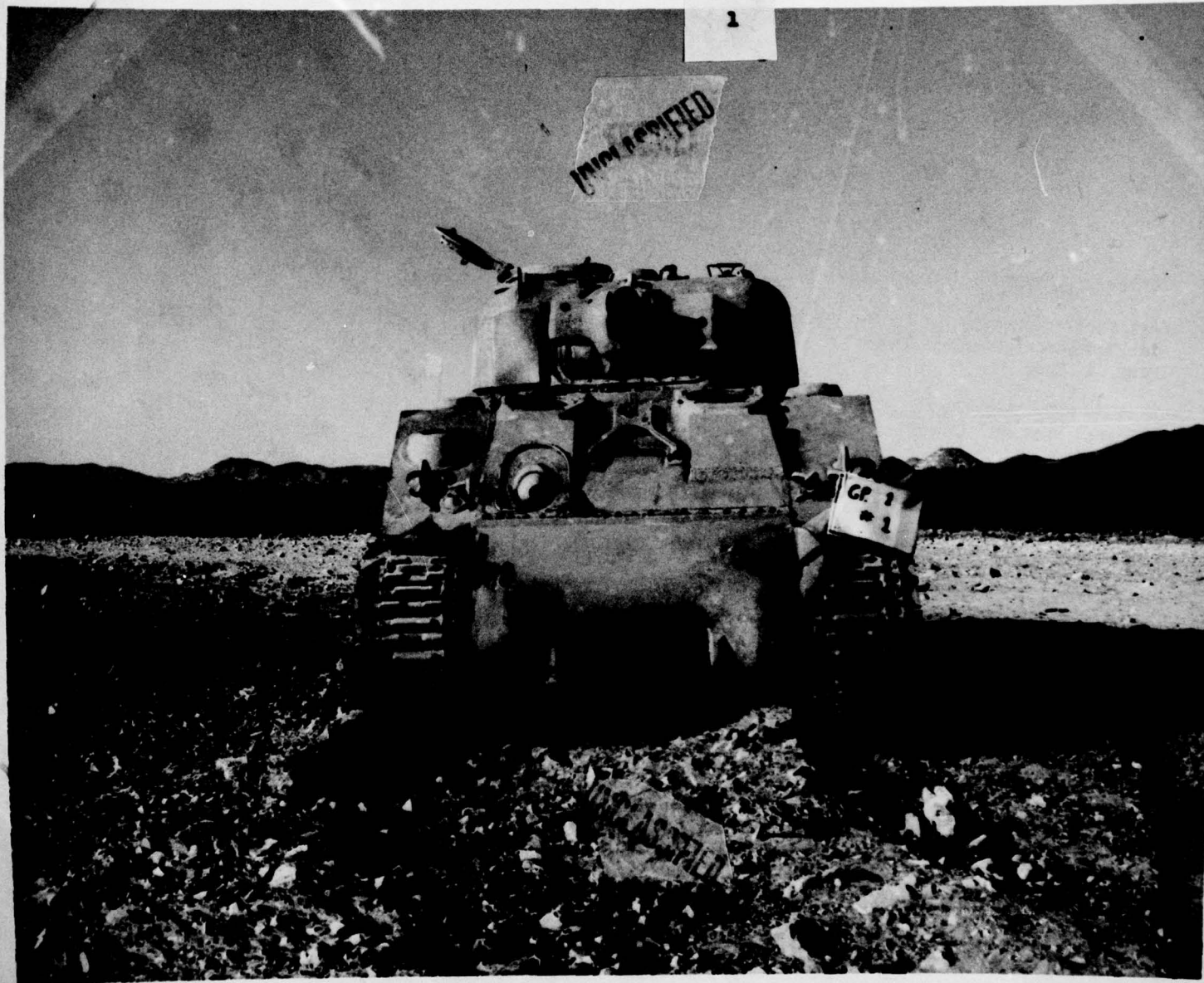


AFTER

1

RECOVERED

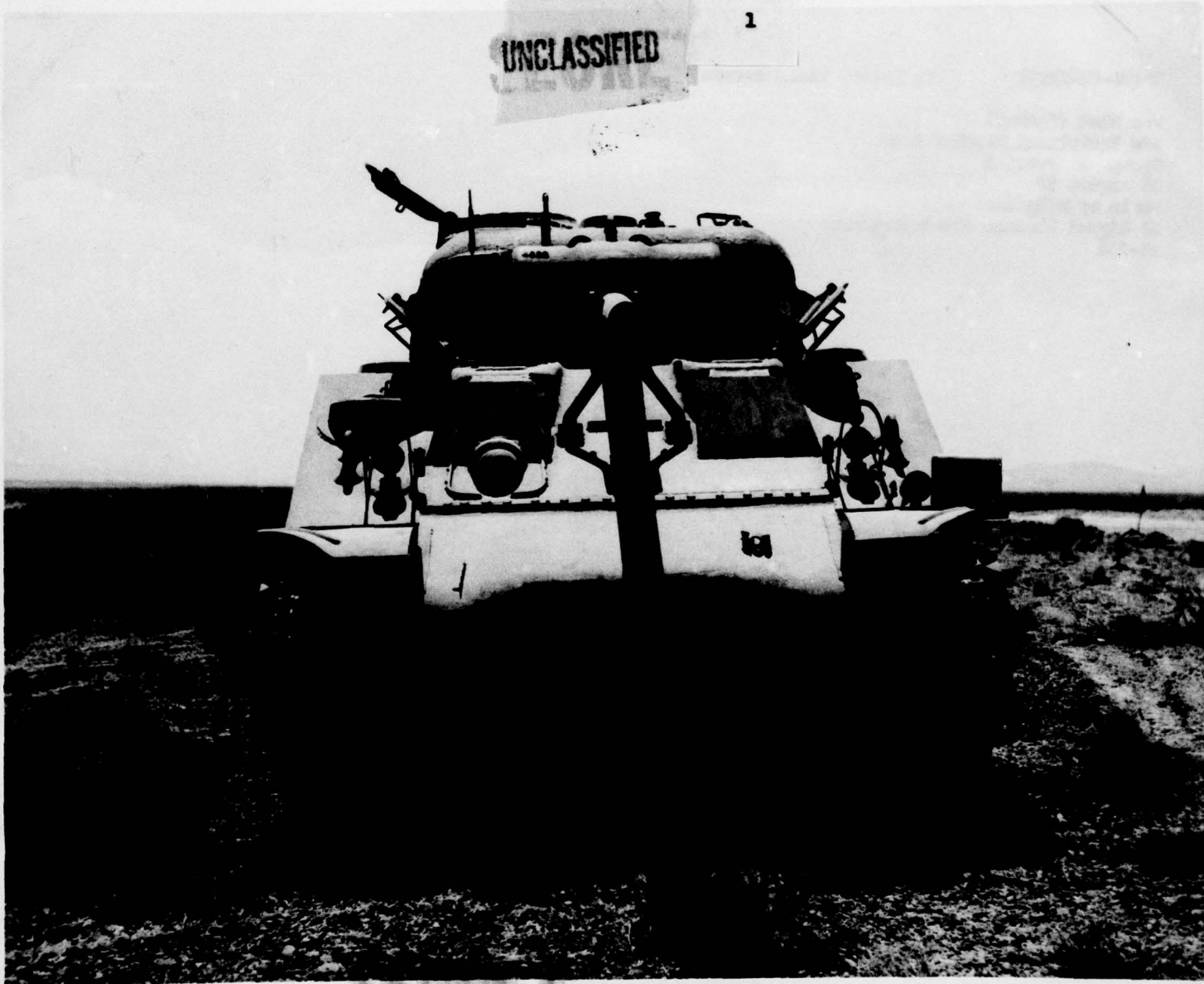
GP 1  
# 1



BEFORE

1

UNCLASSIFIED





BEFORE

2

UNCLASSIFIED



UNCLASSIFIED

AFTER

4

UNCLASSIFIED



AFTER

3

UNCLASSIFIED

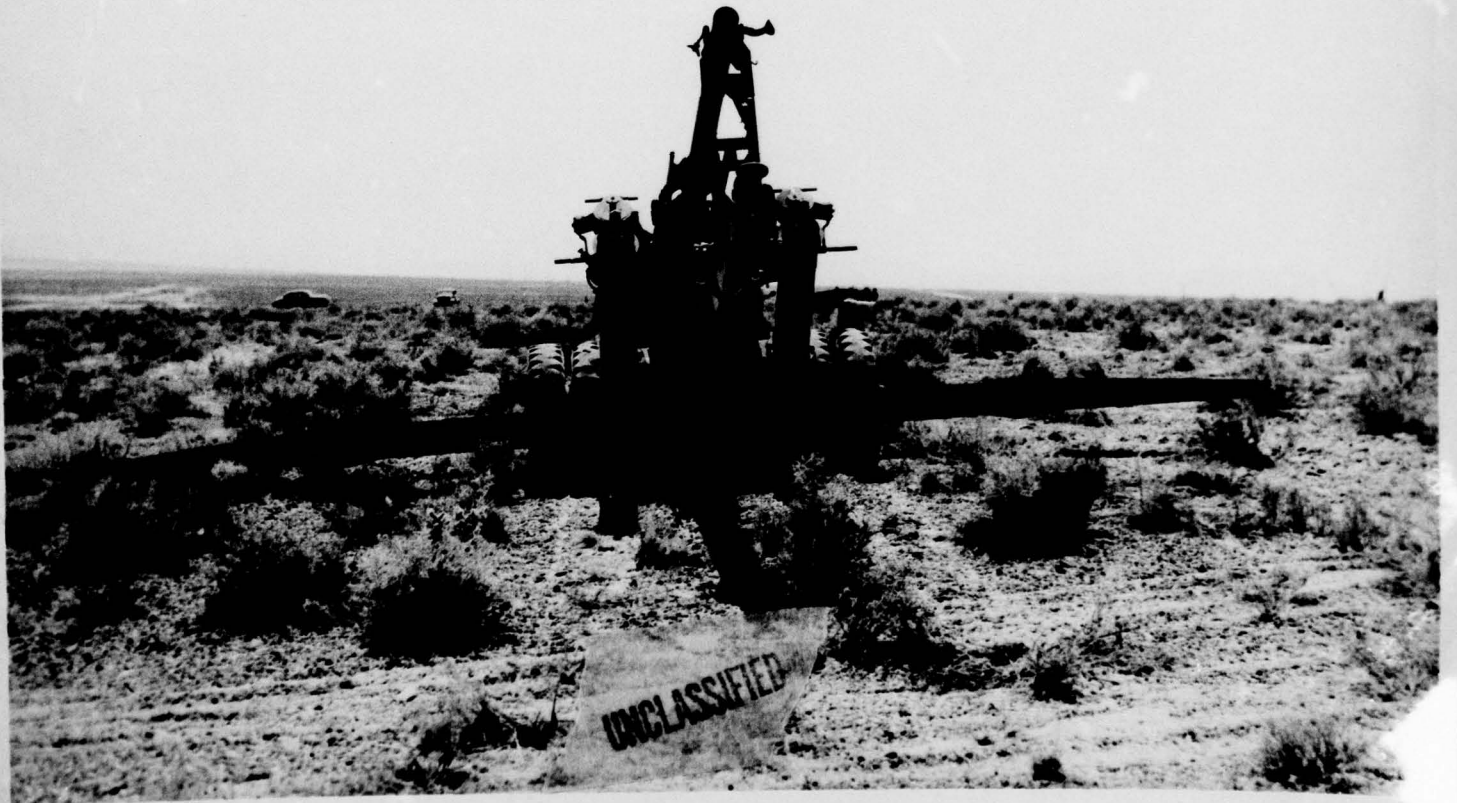




BEFORE

3

UNCLASSIFIED



UNCLASSIFIED

BEFORE  
4

UNCLASSIFIED  
SECRET



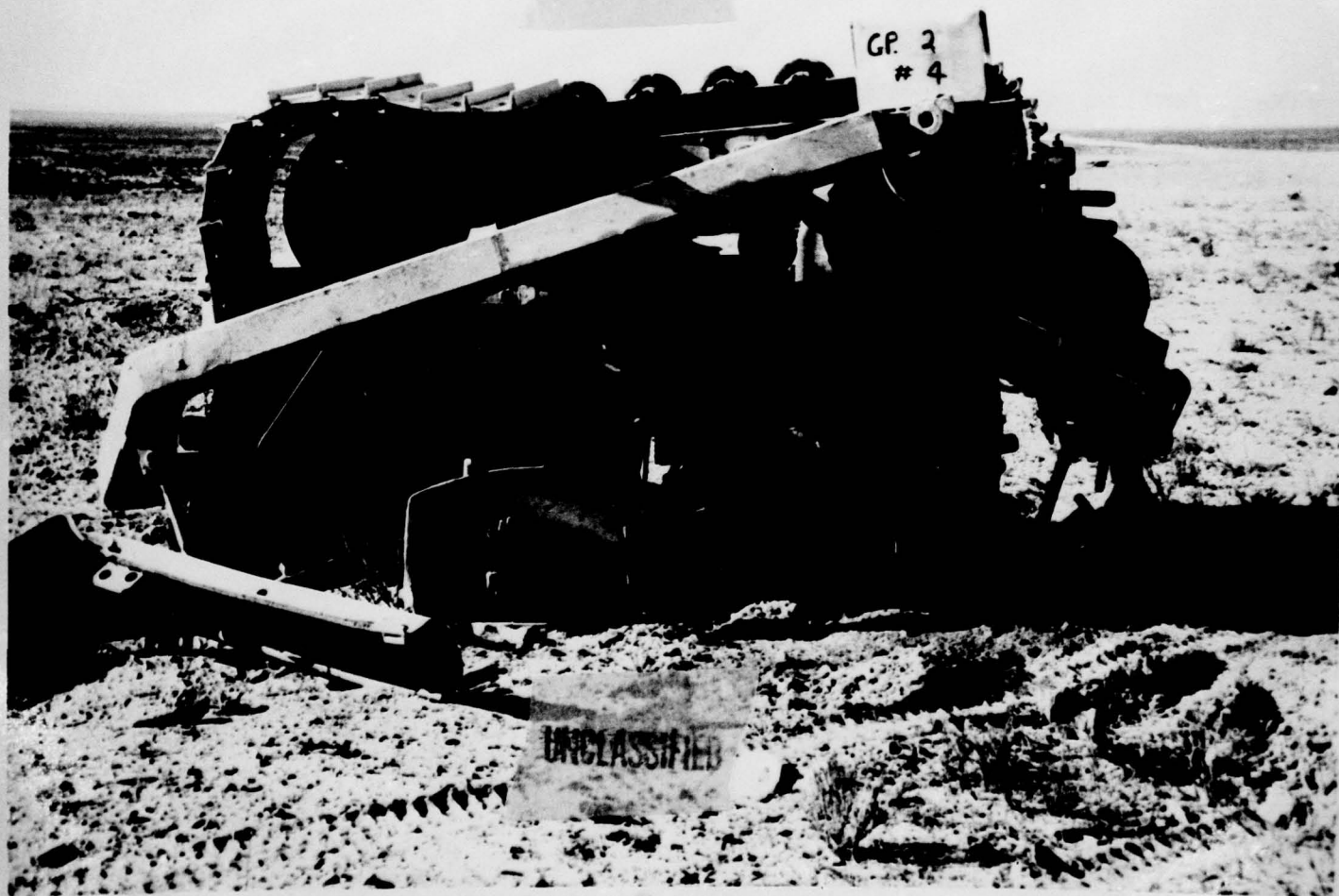
UNCLASSIFIED

AFTER

6

UNCLASSIFIED

GP 2  
# 4



UNCLASSIFIED

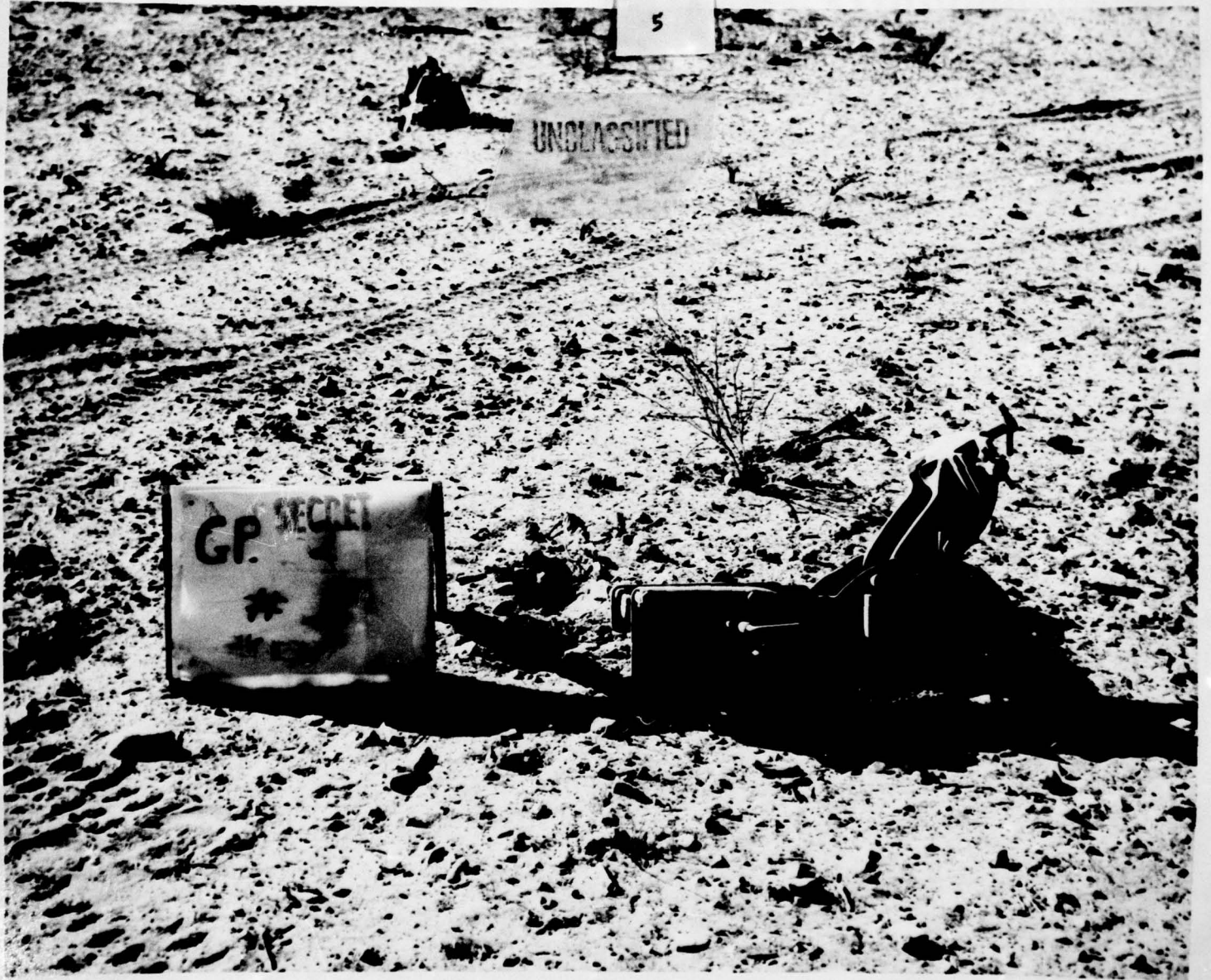


AFTER

5

UNCLASSIFIED

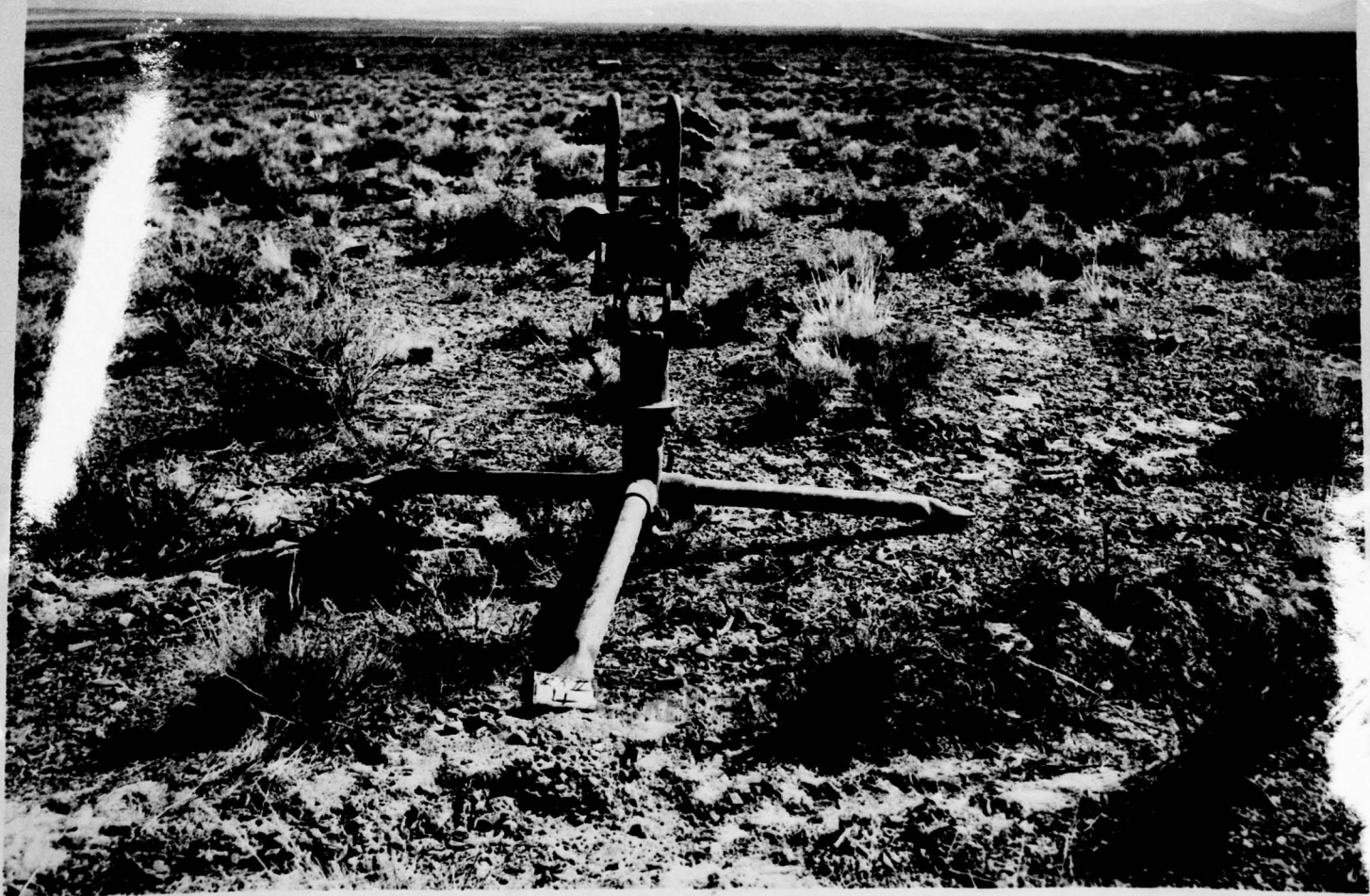
GP. SECRET



BEFORE

5

SECRET  
UNCLASSIFIED





BEFORE

6

UNCLASSIFIED





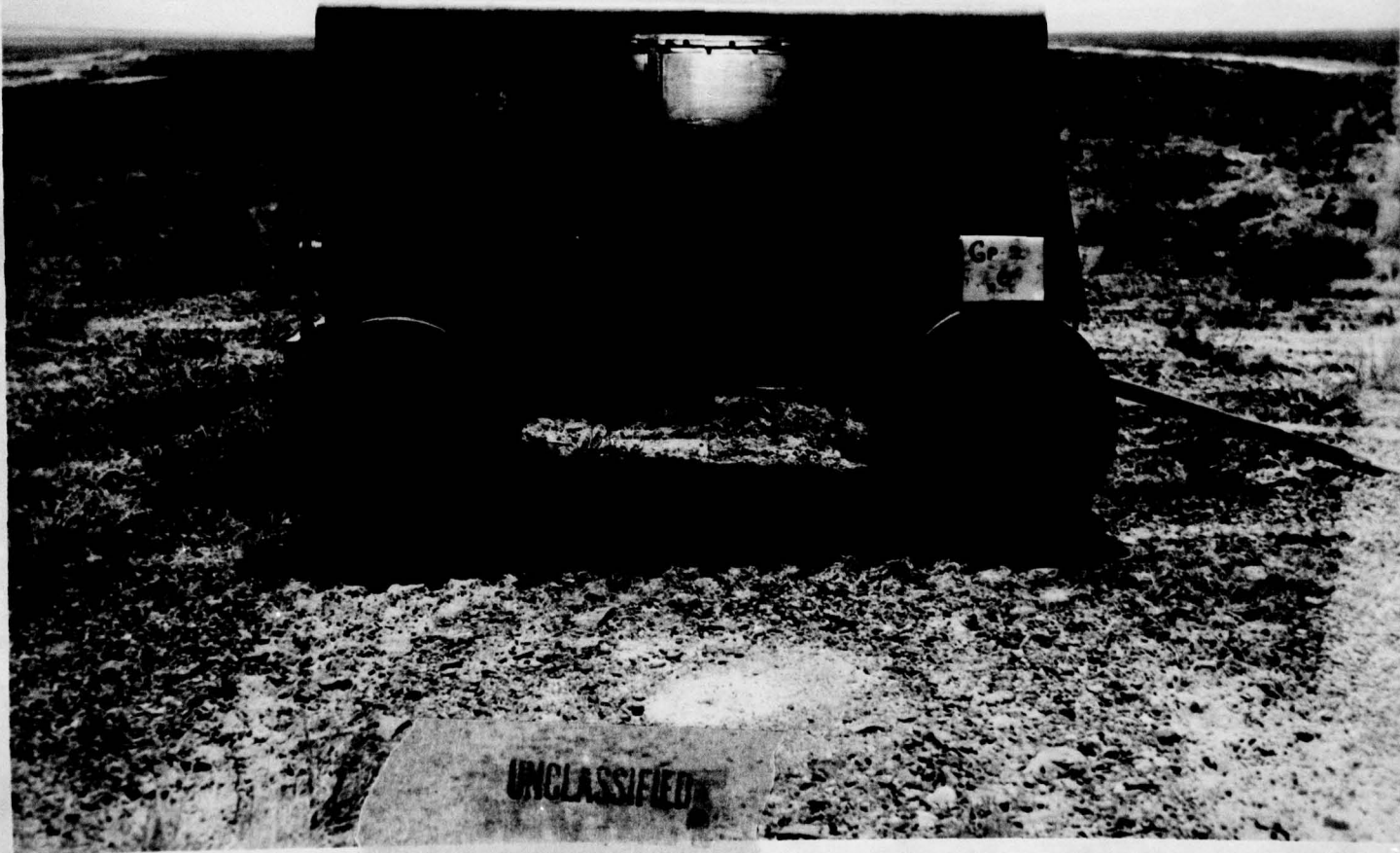
BEFORE

8

UNCLASSIFIED

Go

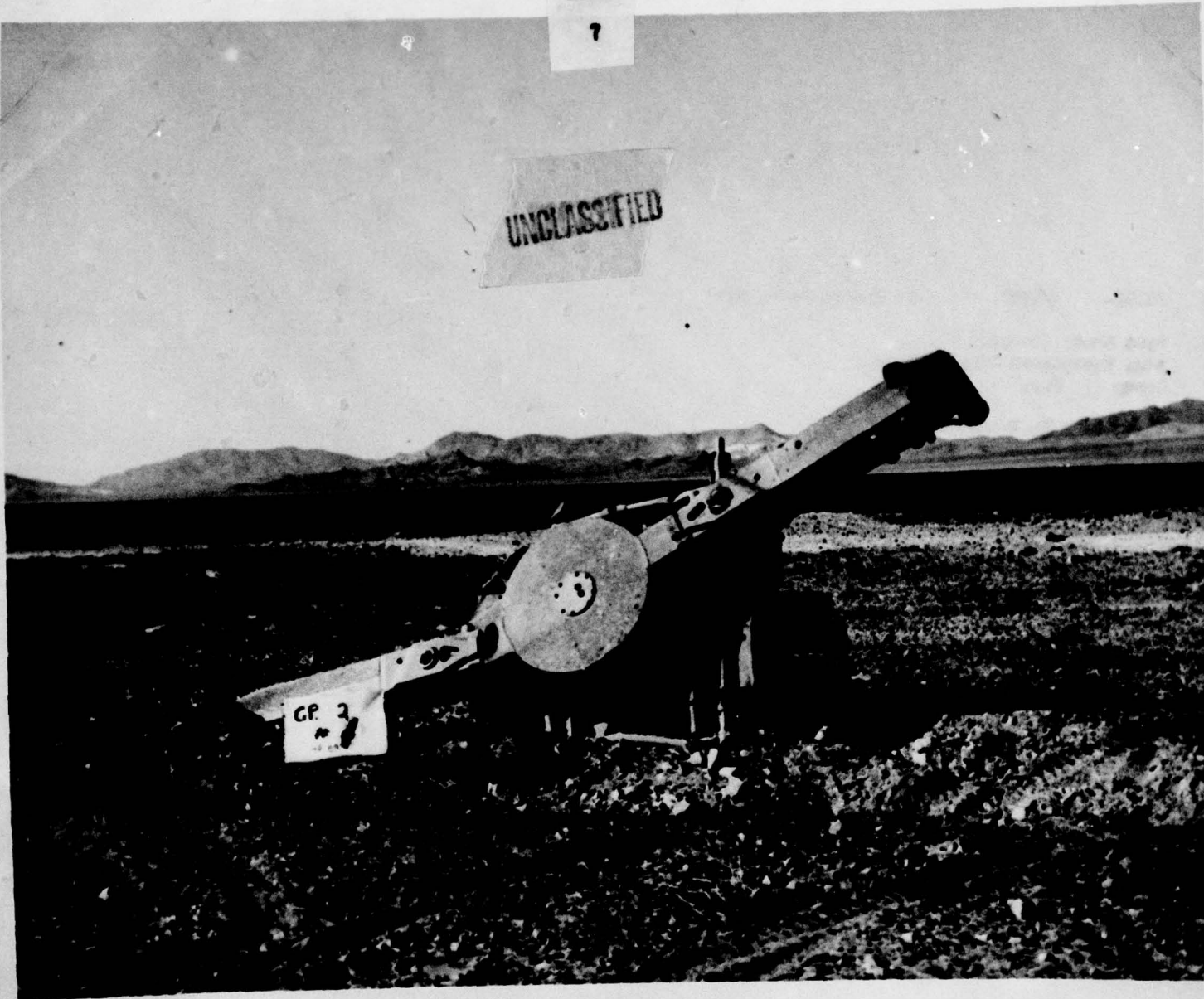
UNCLASSIFIED



AFTER

7

UNCLASSIFIED



GP 3

BEFORE

7

UNCLASSIFIED





BEFORE

8

~~SECRET~~



AFTER

8

UNCLASSIFIED



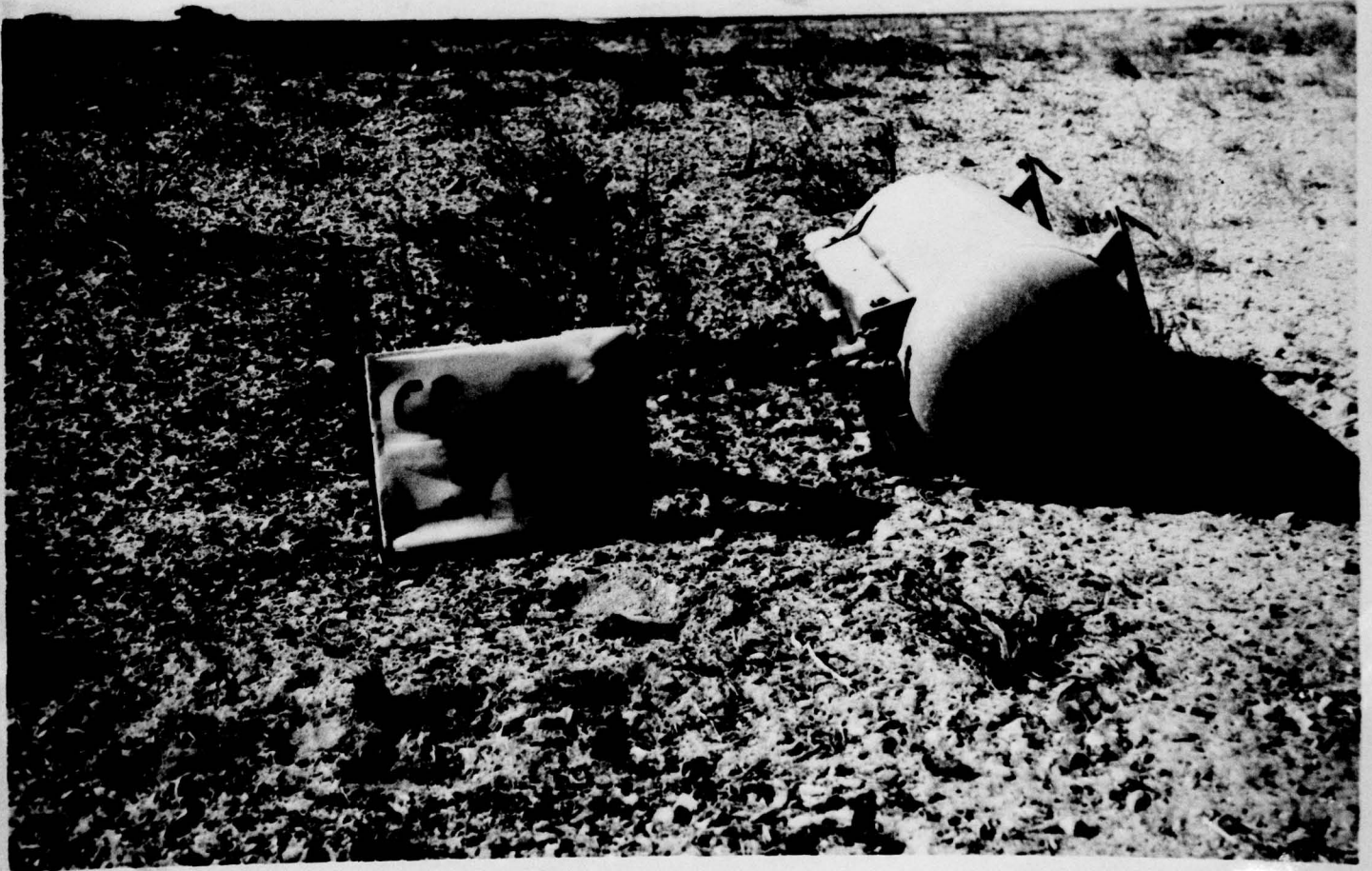
UNCLASSIFIED



AFTER

10

UNCLASSIFIED





AFTER

9

UNCLASSIFIED



BEFORE

9

UNCLASSIFIED

~~SECRET~~



UNCLASSIFIED

~~SECRET~~



BEFORE

10

UNCLASSIFIED  
SECRET



UNCLASSIFIED



AFTER

12

SECRET  
UNCLASSIFIED



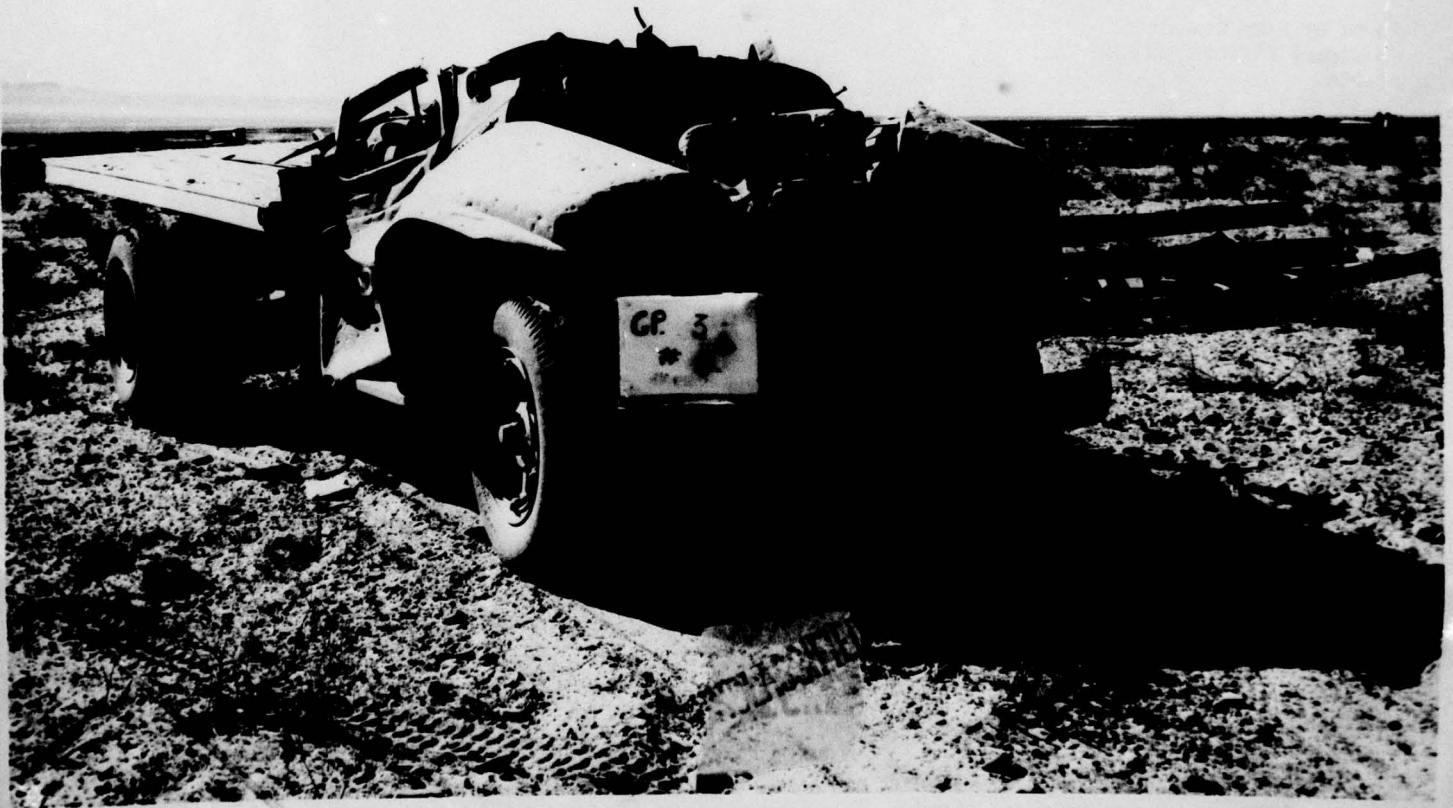
UNCLASSIFIED

GP 3  
# 3

AFTER

11

UNCLASSIFIED



BEFORE

11

~~SECRET~~  
UNCLASSIFIED





BEFORE

12

UNCLASSIFIED



UNCLASSIFIED

AFTER

14

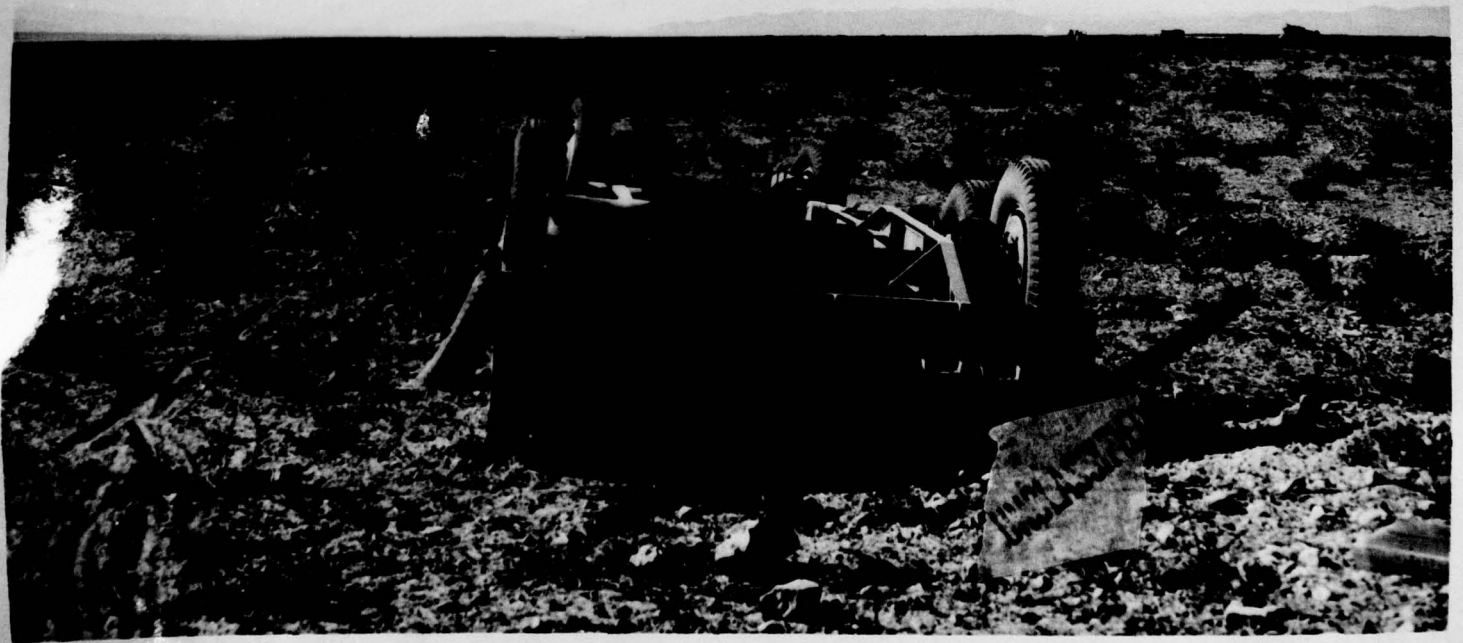
UNCLASSIFIED



AFTER

13

UNCLASSIFIED





REPORT

13

UNCLASSIFIED



SECRET

BEFORE  
14

UNCLAS  
UNCLASSIFIED

GP-3  
6  
H



AFTER

16

UNCLASSIFIED  
UNCLASSIFIED

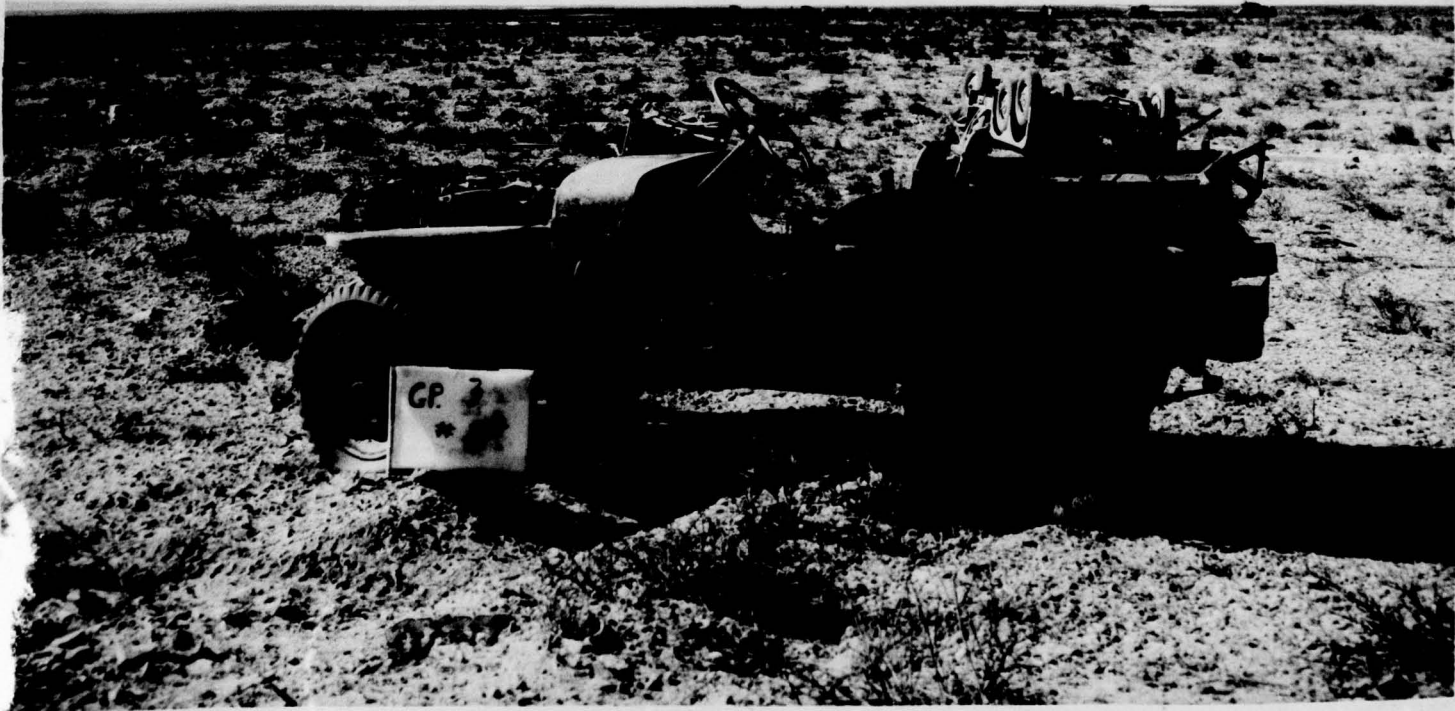




AFTER

15

UNCLASSIFIED



BEFORE

15

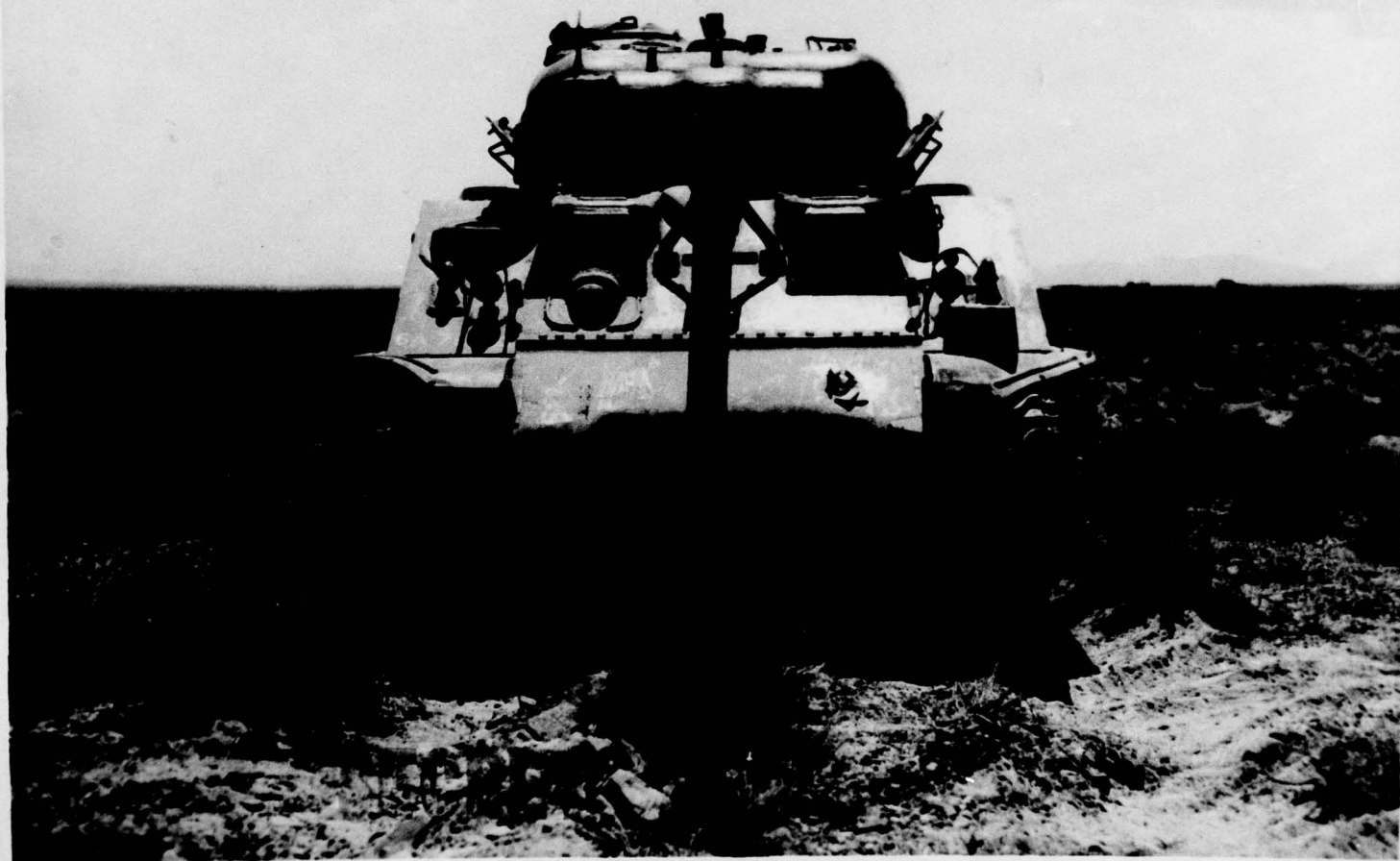
UNCLASSIFIED



BEFORE

16

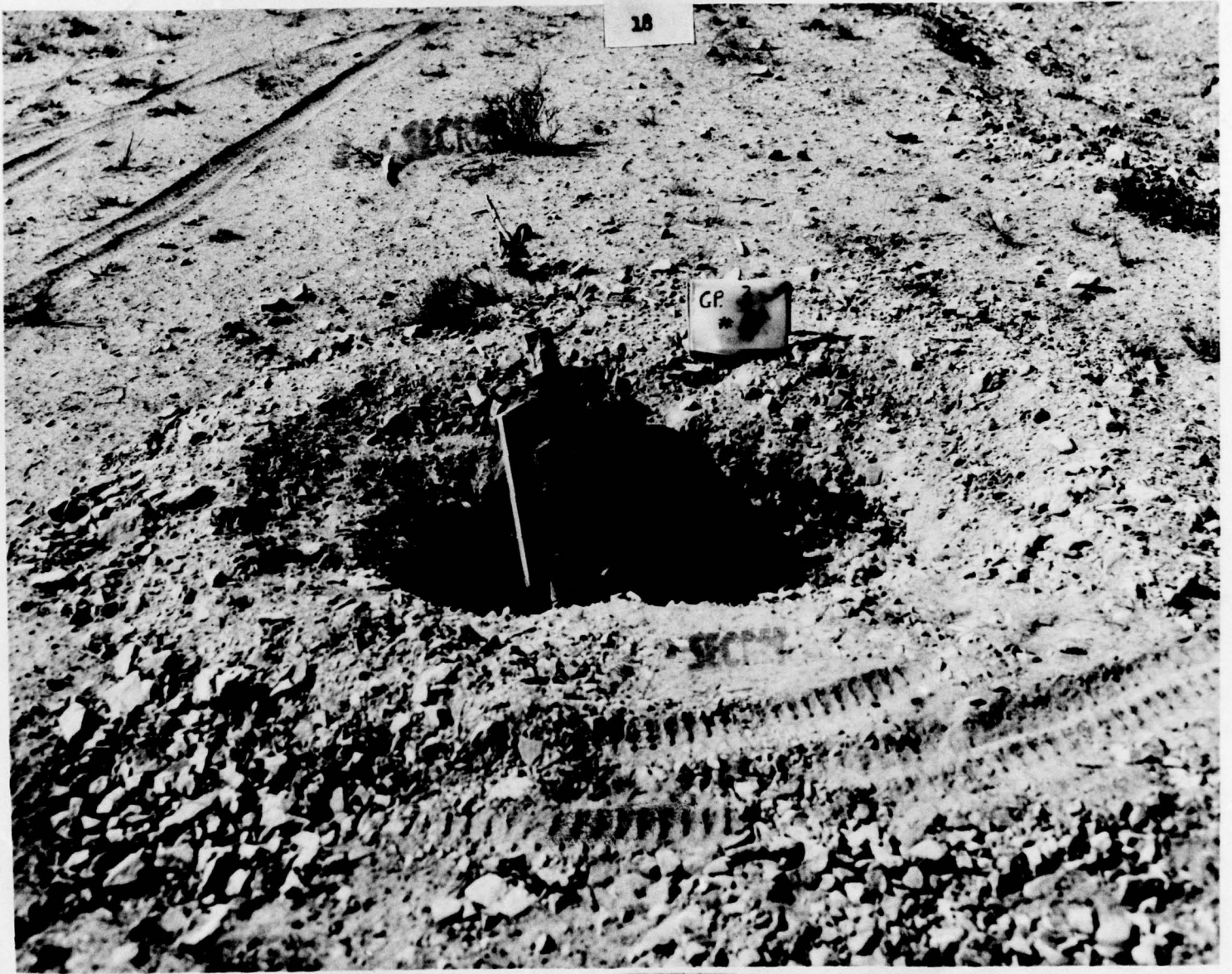
SECRET  
UNCLASSIFIED





AFTER

18



AFTER

27

G

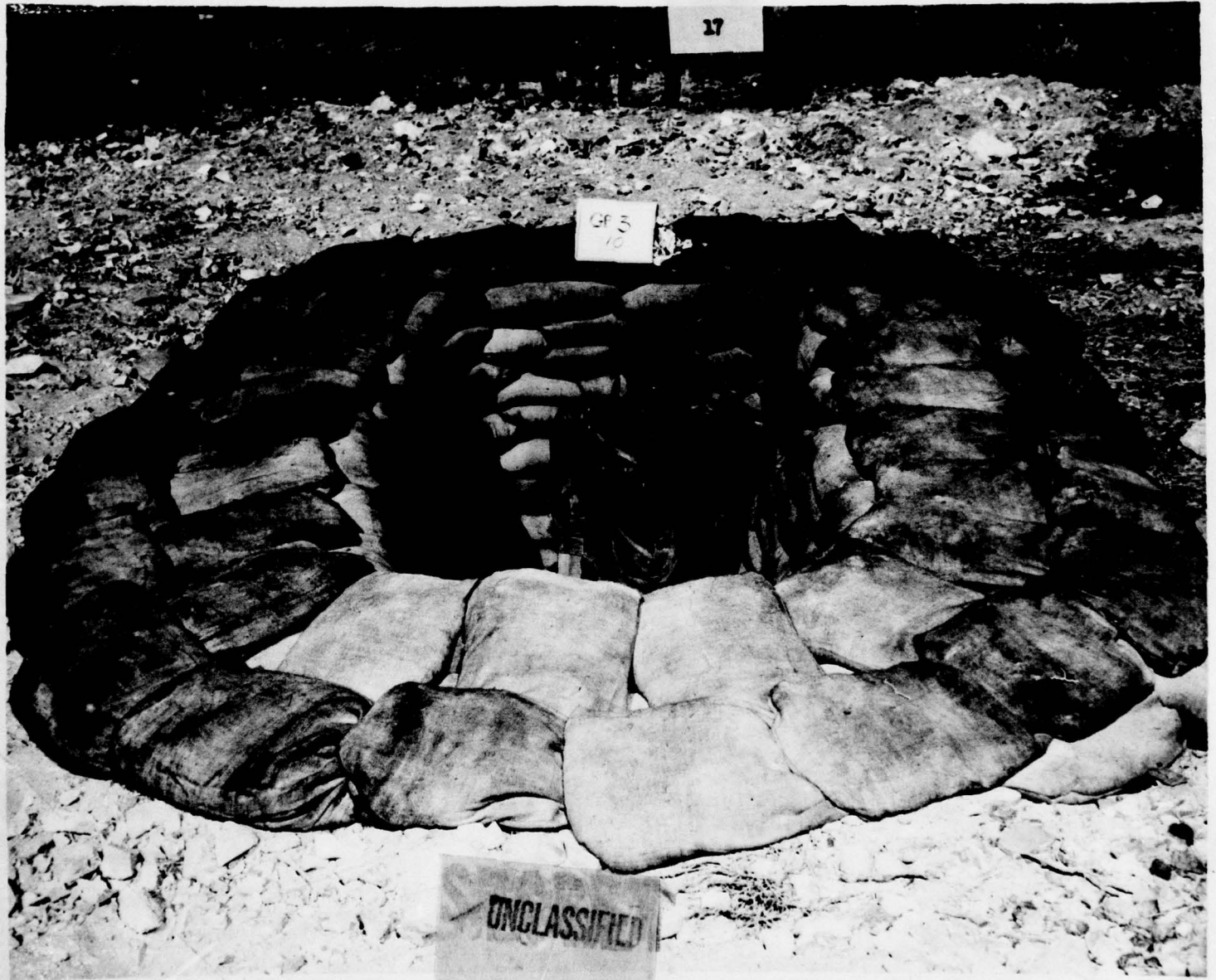
UNCLASSIFIED





BEFORE

17



UNCLASSIFIED



BEFORE

18

GP 3  
//

UNCLASSIFIED



AFTER

20

UNCLASSIFIED

GP 4  
NO 3



AFTER

19

SECRET  
UNCLASSIFIED



GP 4  
NO



BEFORE

19

~~SECRET~~  
UNCLASSIFIED



BEFORE  
20

~~SECRET~~  
UNCLASSIFIED



UNCLASSIFIED

AFTER

22

SECRET



GP 11  
M 11



AFTER

21

~~SECRET~~  
UNCLASSIFIED



BEFORE

21

UNCLASSIFIED





BEFORE

22



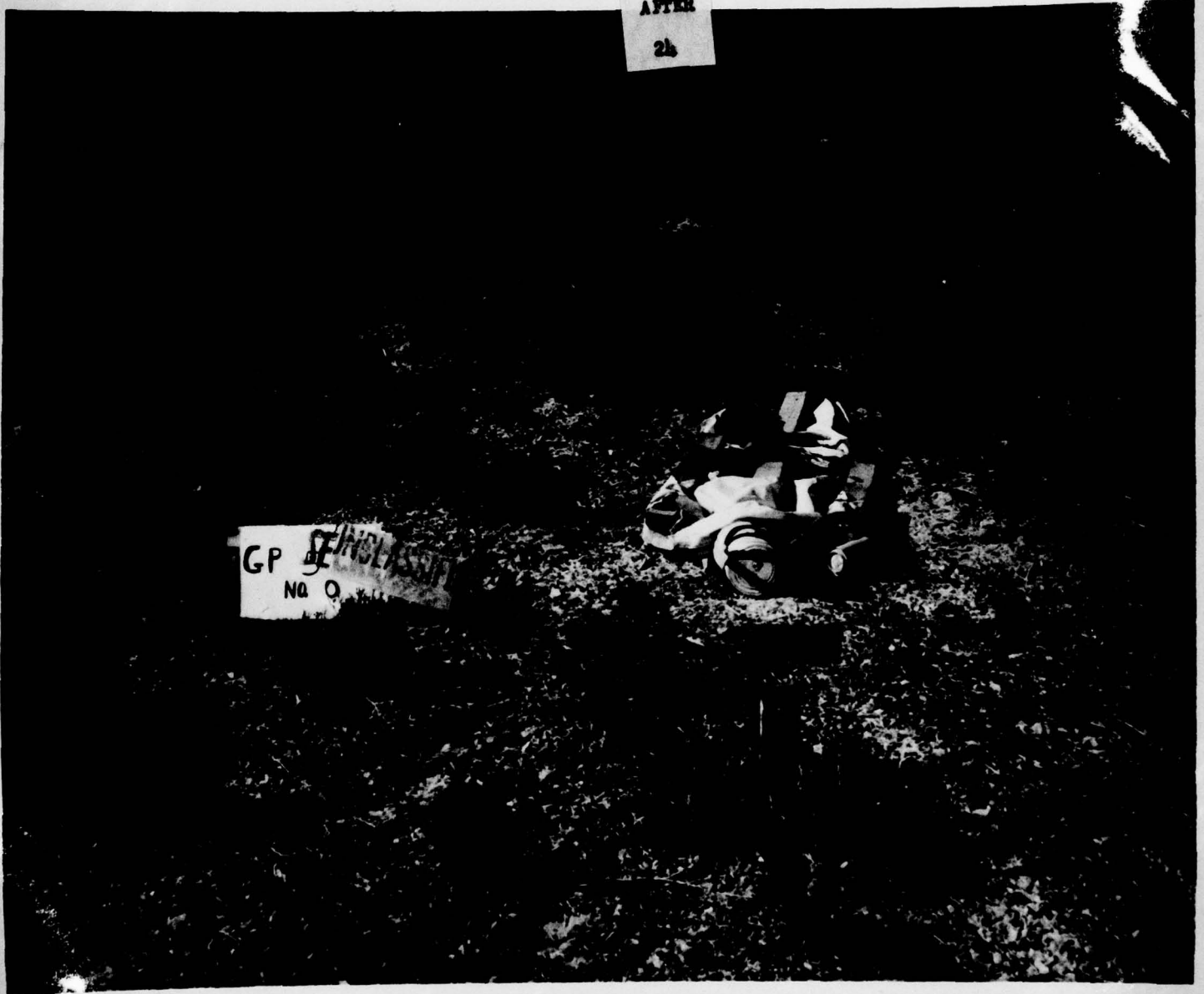
UNCLASSIFIED



AFTER

2b

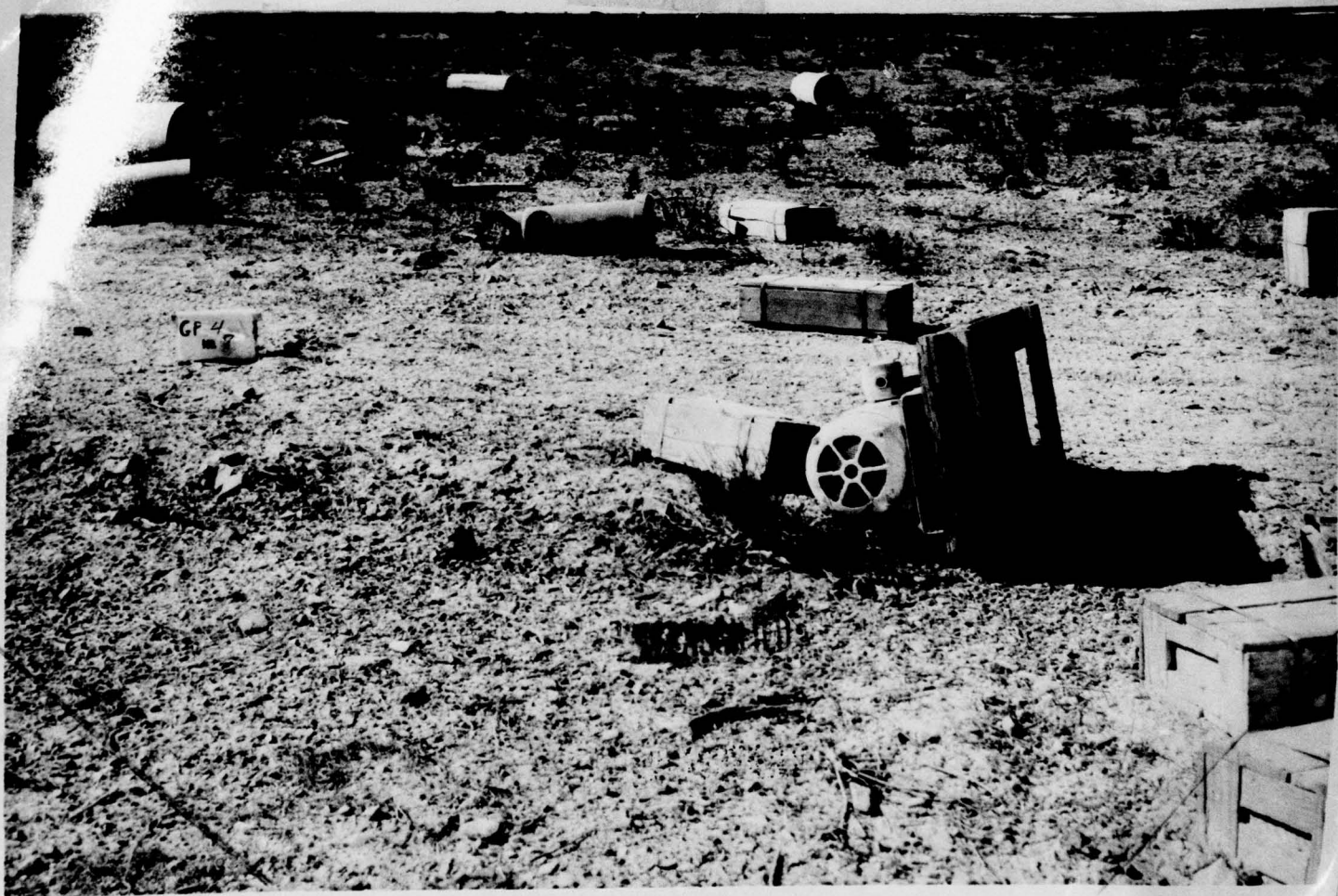
GP 5  
NO. 0



AFTER

23

SECRET  
UNCLASSIFIED

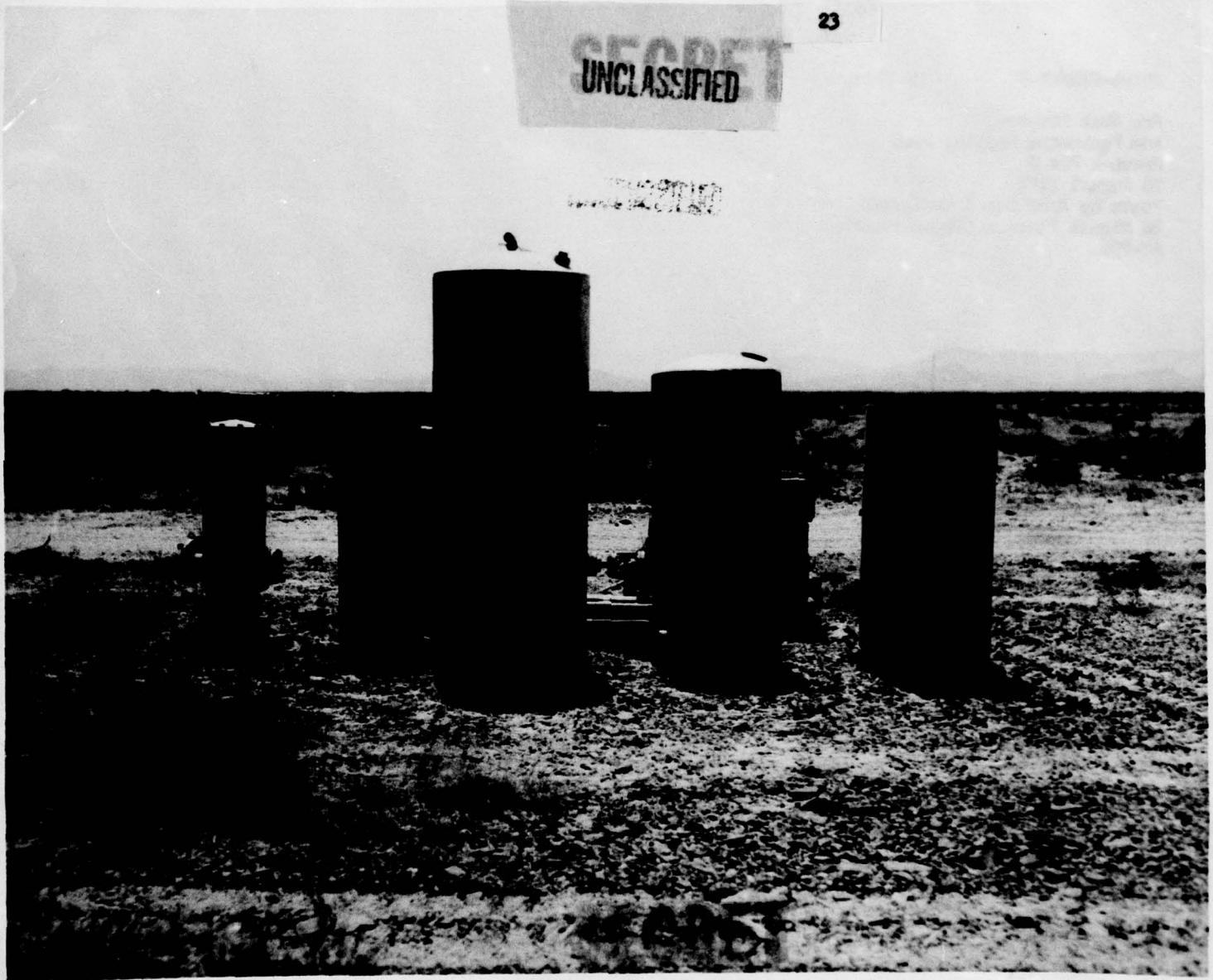


BEFORE

23

SECRET  
UNCLASSIFIED

SECRET  
UNCLASSIFIED

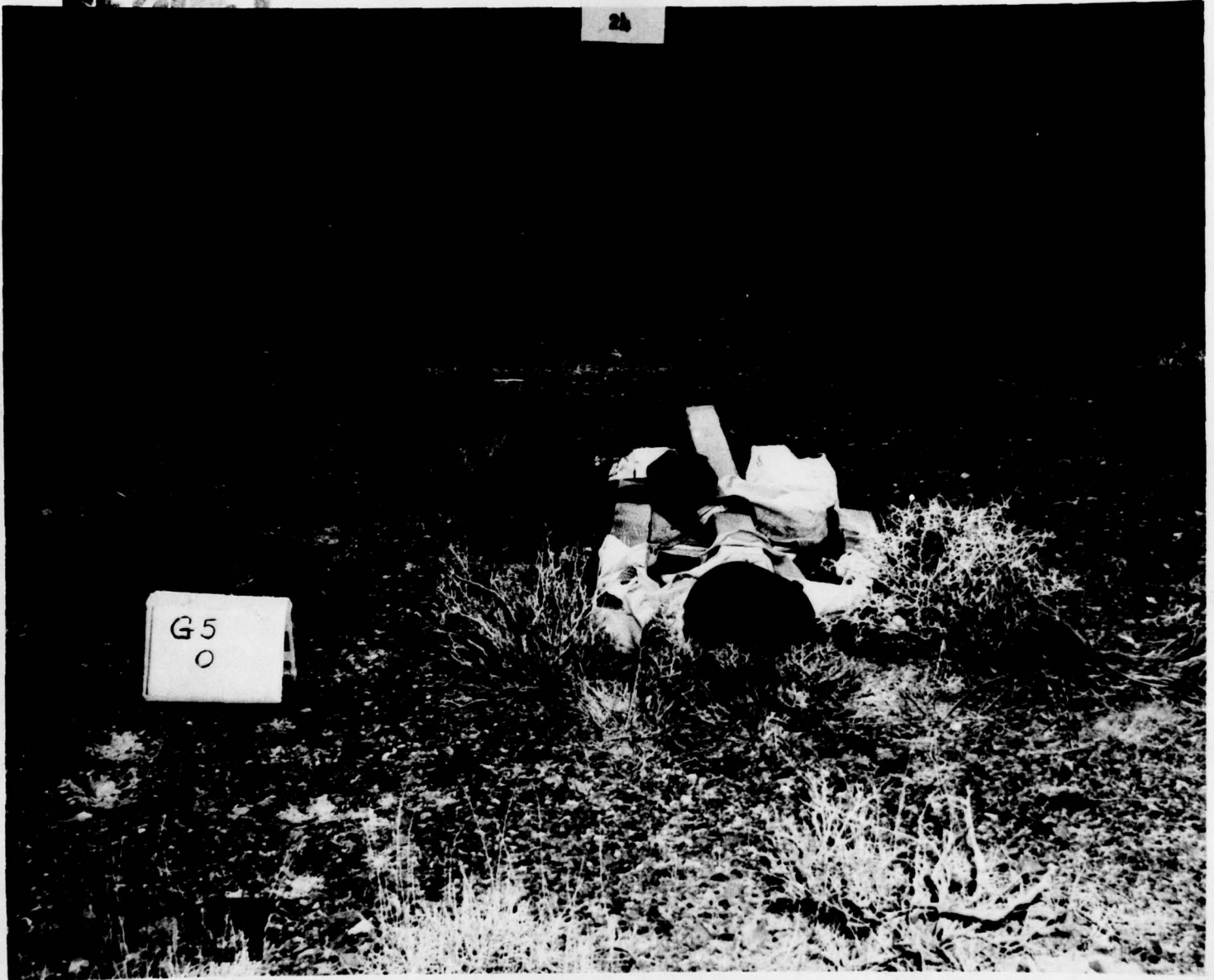




REMARKS

BEFORE

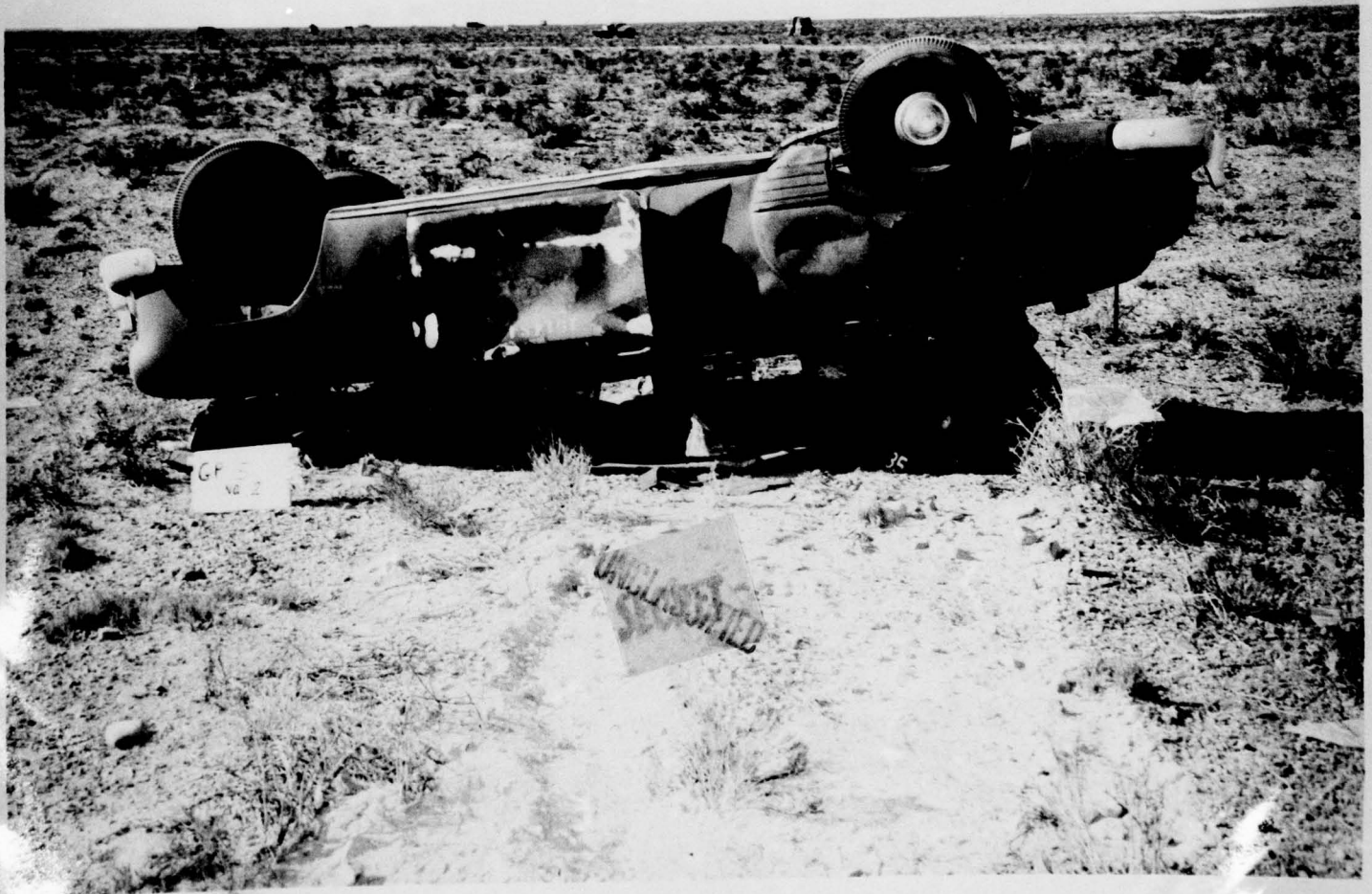
2b



AFTER

26

UNCLASSIFIED



AFTER

25

GP 5  
No 1

UNIVERSITY MICROFILMS





BPFCRS

25

~~SECRET~~  
UNCLASSIFIED

GP-5  
1  
H-H

UNCLASSIFIED



BEFORE

26

UNCLASSIFIED  
SECRET



AFTER

28

UNCLASSIFIED



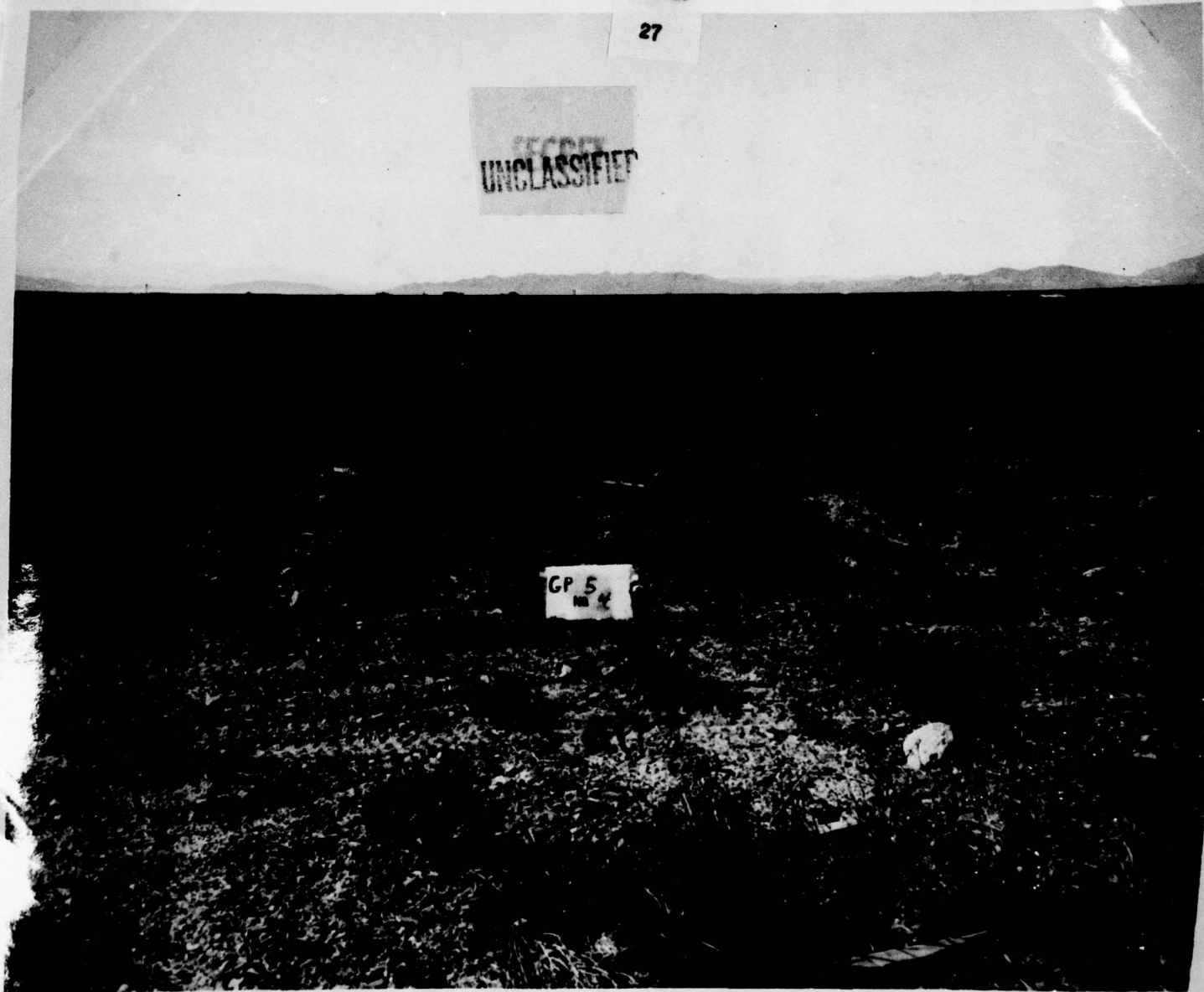


AFTER

27

SECRET  
UNCLASSIFIED

GP 5  
NO 2



UNCLASSIFIED

BEFORE

27

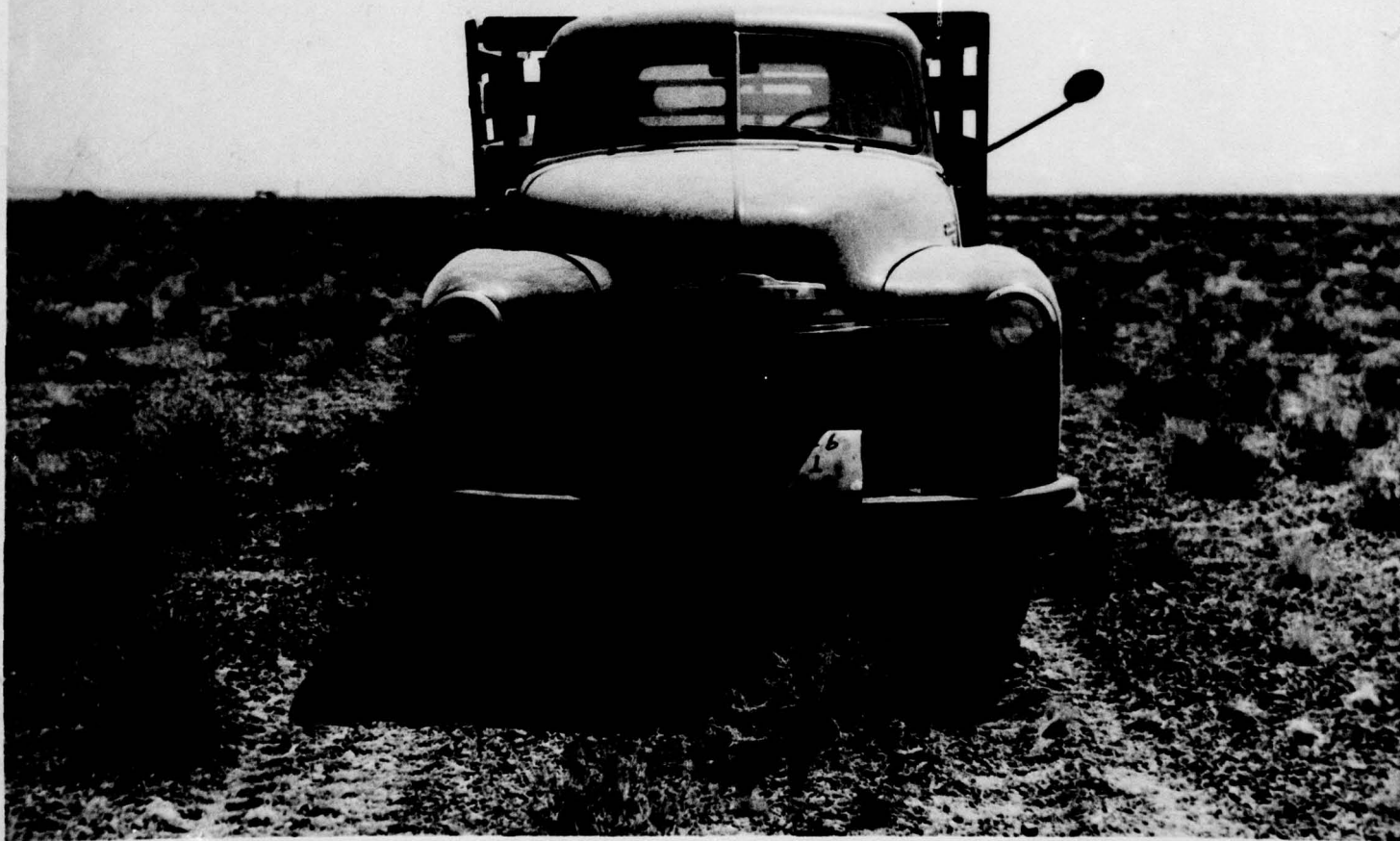


60

BEFORE

28

UNCLASSIFIED

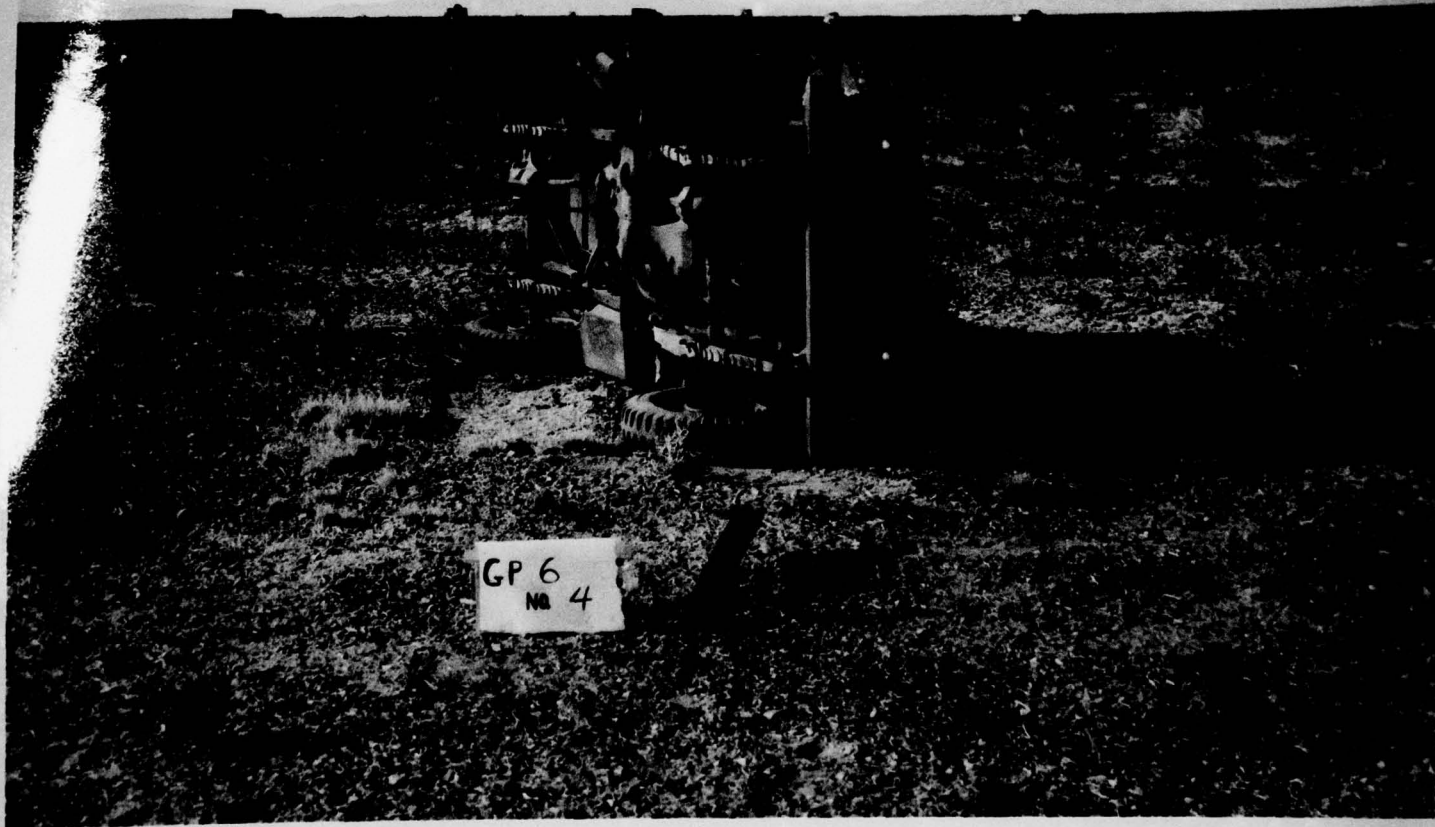




AFTER

30

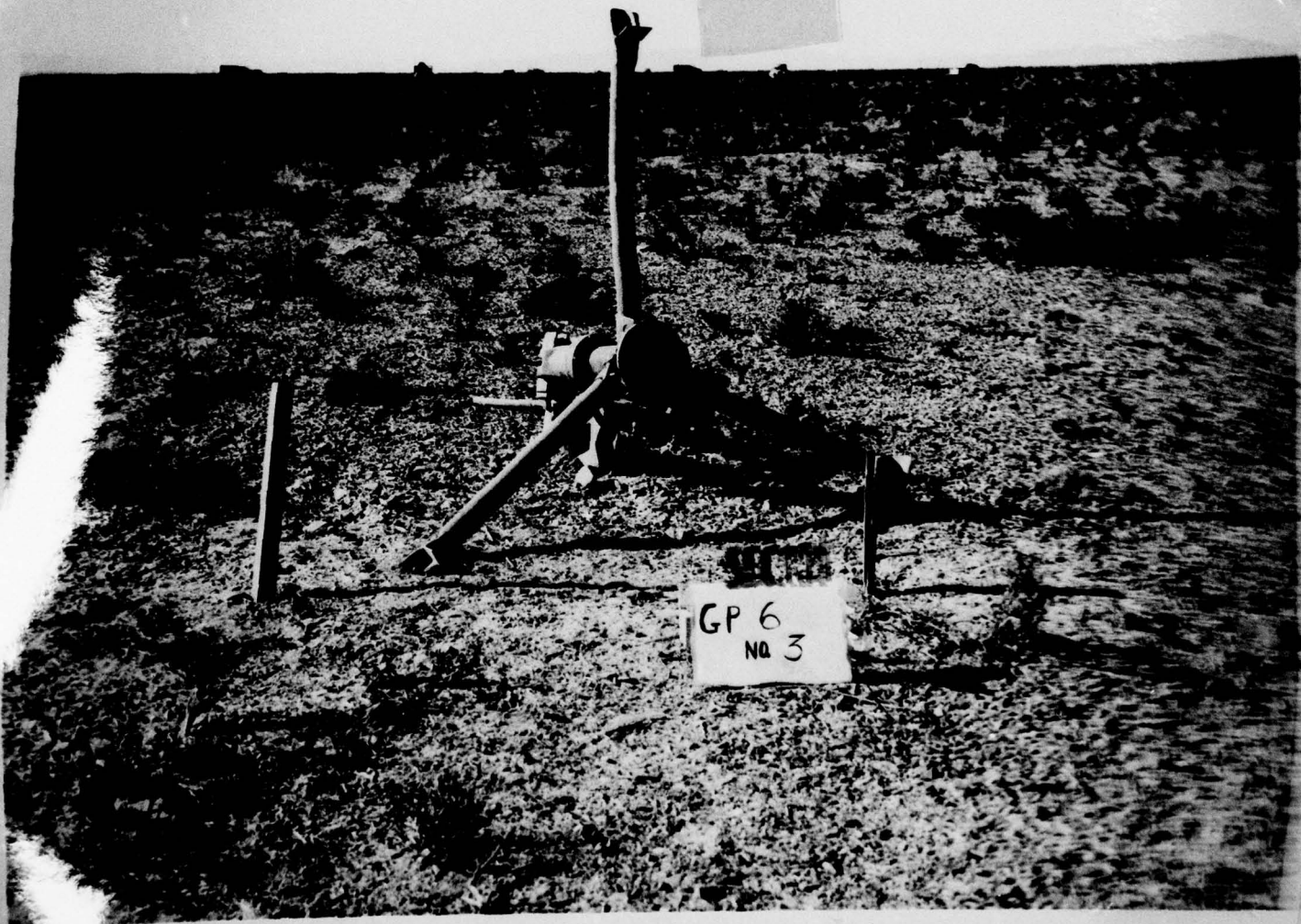
UNCLASSIFIED



AFTER

29

UNCLASSIFIED





**SECRET**  
**UNCLASSIFIED**

**BEFORE**

**29**



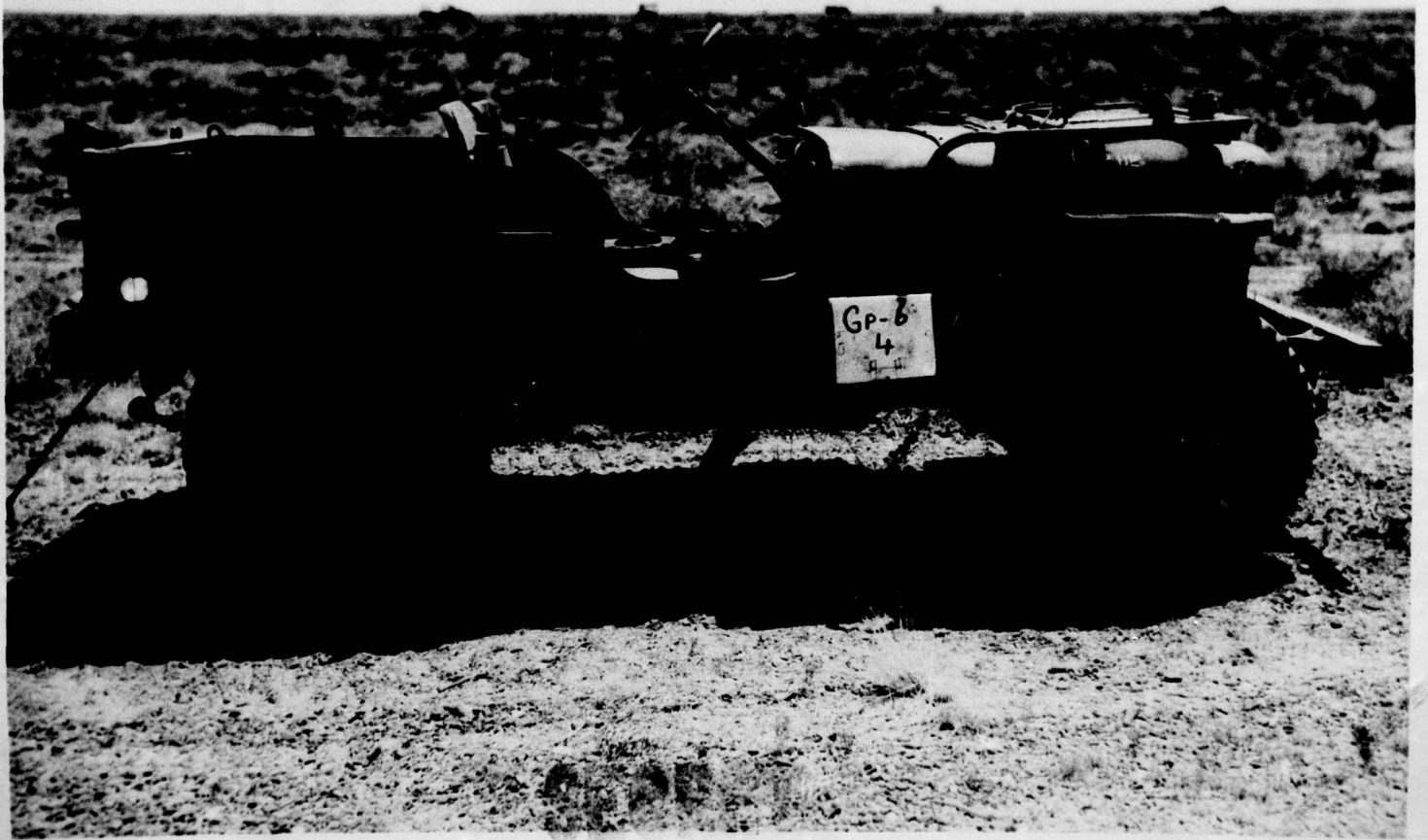
**SECRET**



S UNCLASSIFIED

BEFORE

GP-6  
4



AFTER

32

UNCLASSIFIED



AFTER

31

UNCLASSIFIED





BEFORE

31

~~SECRET~~  
UNCLASSIFIED



BEFORE

32

UNCLASSIFIED



UNCLASSIFIED

AFTER

36

GP 8  
NA 3

UNCLASSIFIED





AD-A078 561

EXERCISE DESERT ROCK LAS VEGAS NV  
EXERCISE DESERT ROCK VII AND VIII. ANNEX L.(U)  
1957

F/6 18/3

UNCLASSIFIED

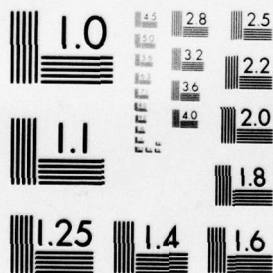
NL

3 OF 2  
AD  
A078561



END  
DATE  
FILMED  
-80  
DDC

07856

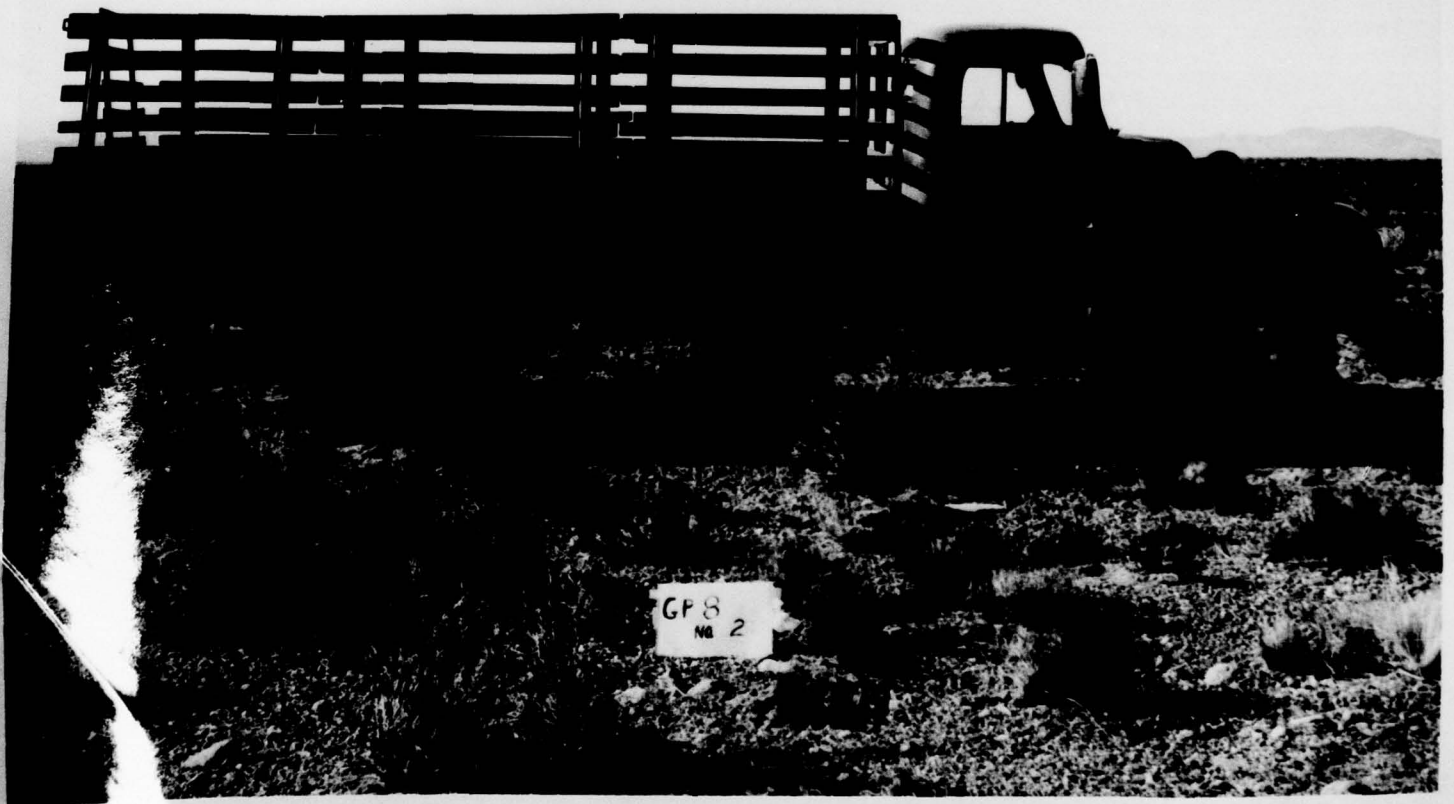


MICROCOPY RESOLUTION TEST CHART  
NATIONAL BUREAU OF STANDARDS-1963-A

AFTER

33

UNCLASSIFIED



GP8  
No 2



BEFORE

33

UNCLASSIFIED

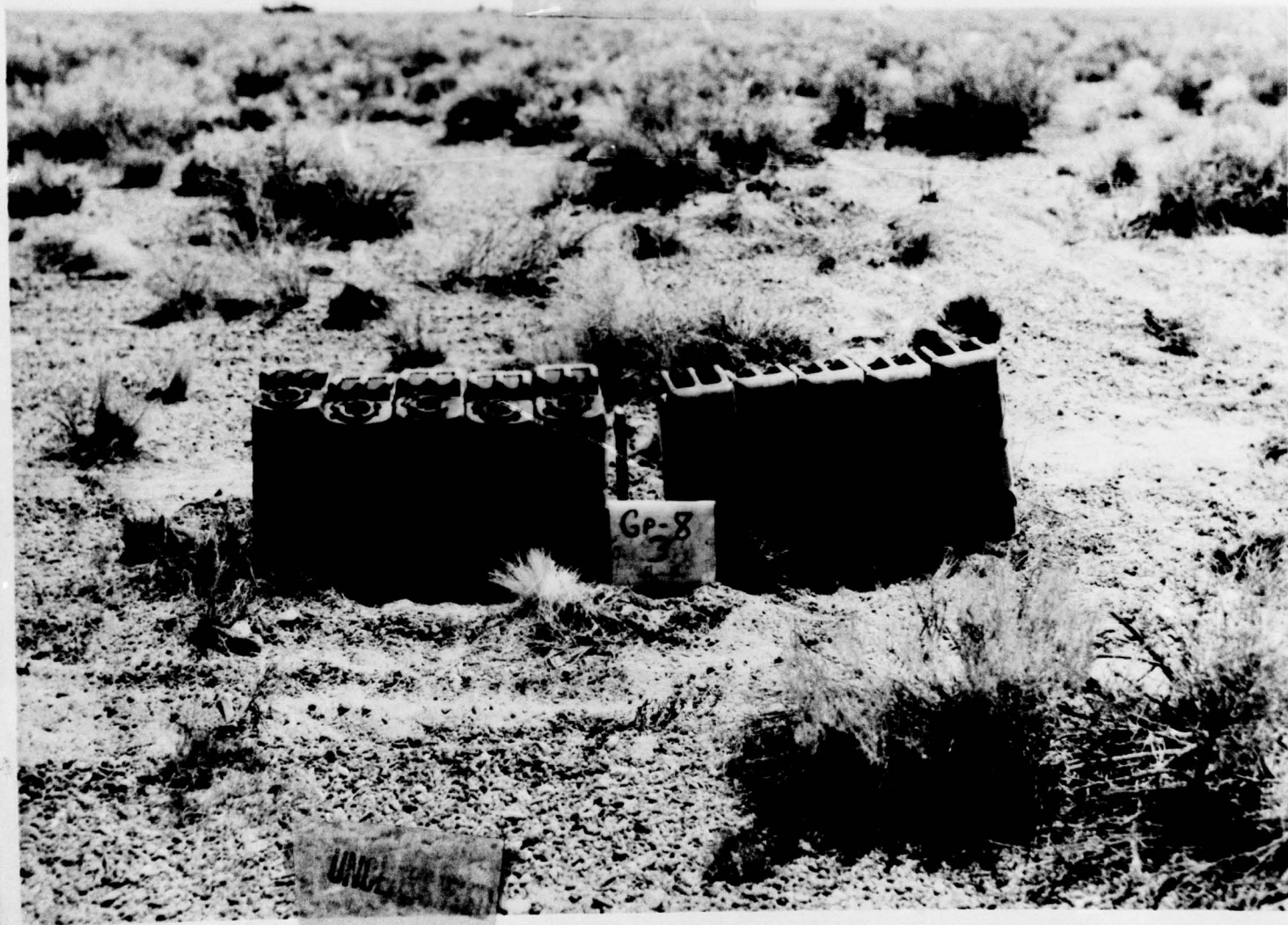


UNCLASSIFIED

~~SECRET~~  
UNCLASSIFIED

BEFORE

34



AFTER

36

UNCLASSIFIED





AFTER

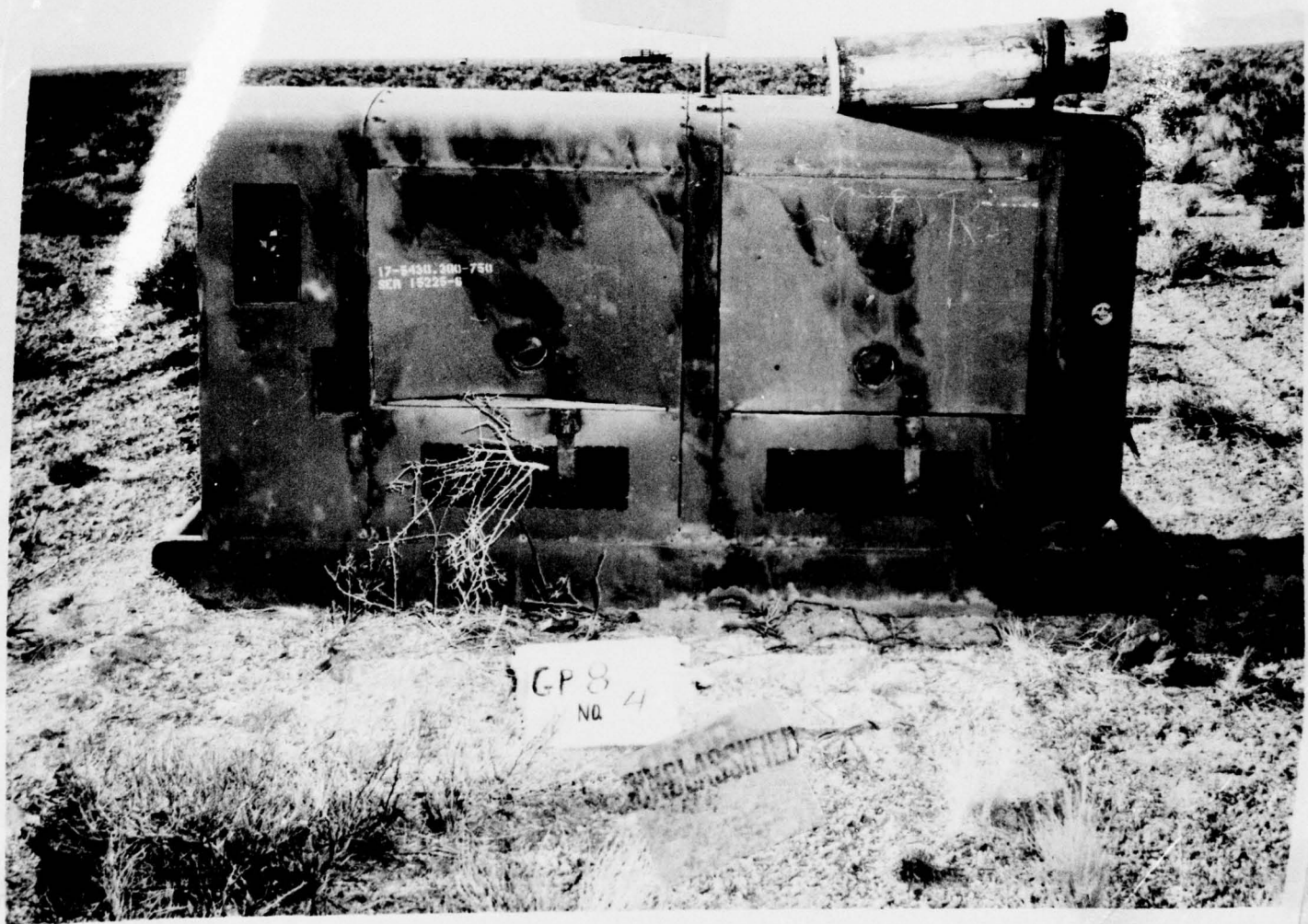
35

UNCLASSIFIED

17-6430-200-750  
SER 15225-0

GP 8  
NO 4

UNCLASSIFIED



BEFORE

35

~~SECRET~~  
UNCLASSIFIED

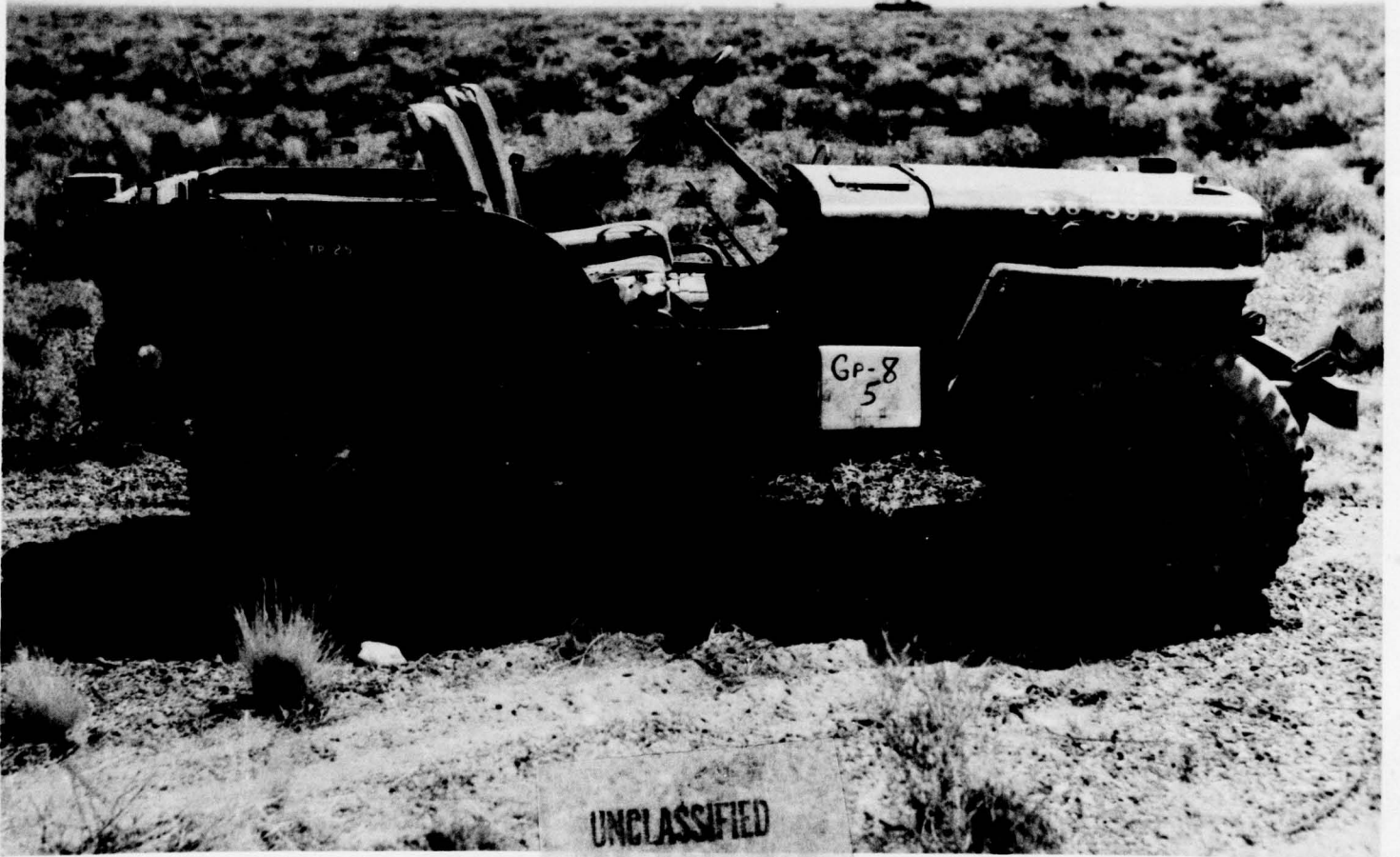


UNCLASSIFIED

BEFORE

36

UNCLASSIFIED



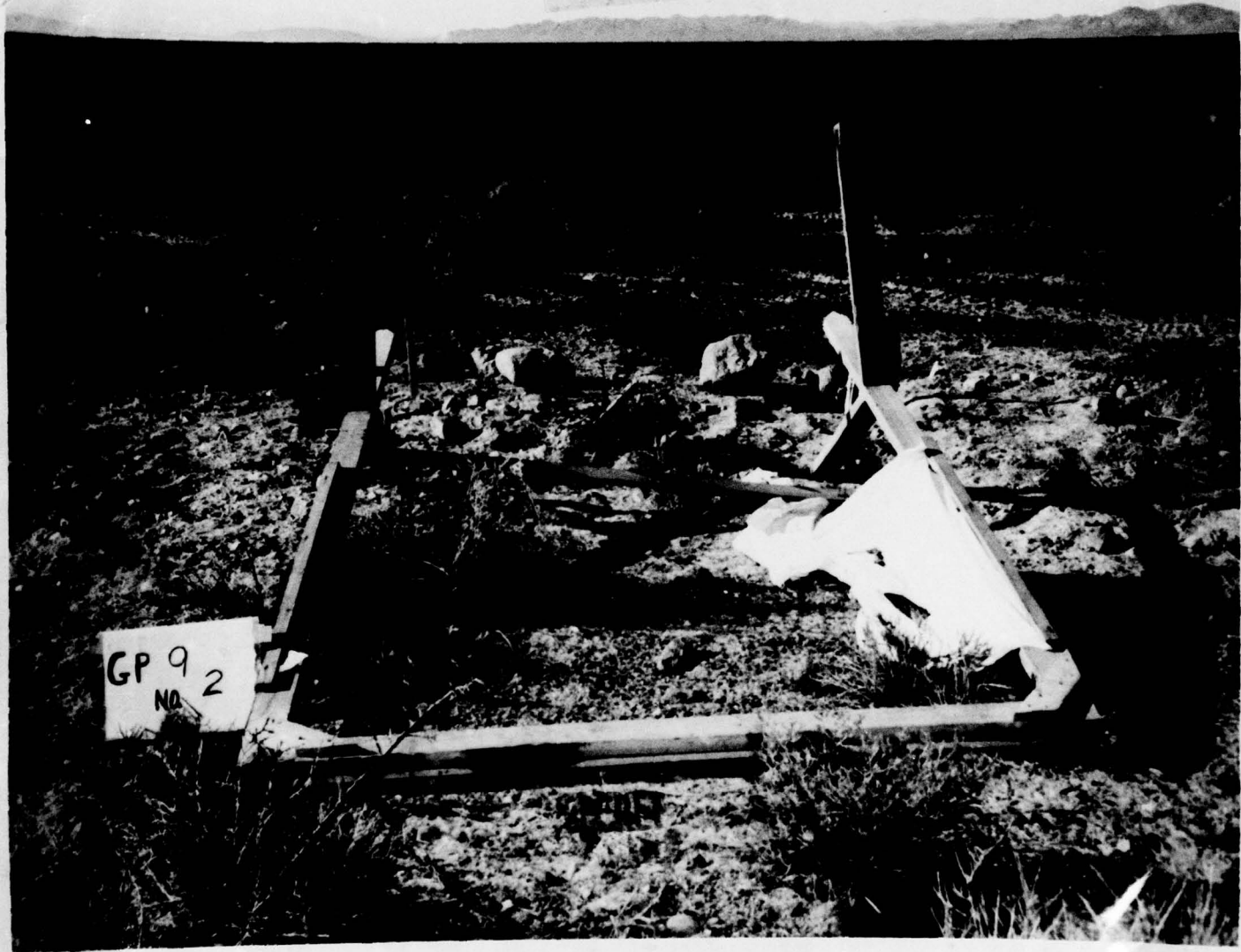
UNCLASSIFIED



UNCLASSIFIED  
SECRET

AFTER

38



GP 9  
NO 2

AFTER

37

UNCLASSIFIED  
SECRET



GP 9  
No 1

~~SECRET~~

BEFORE

37



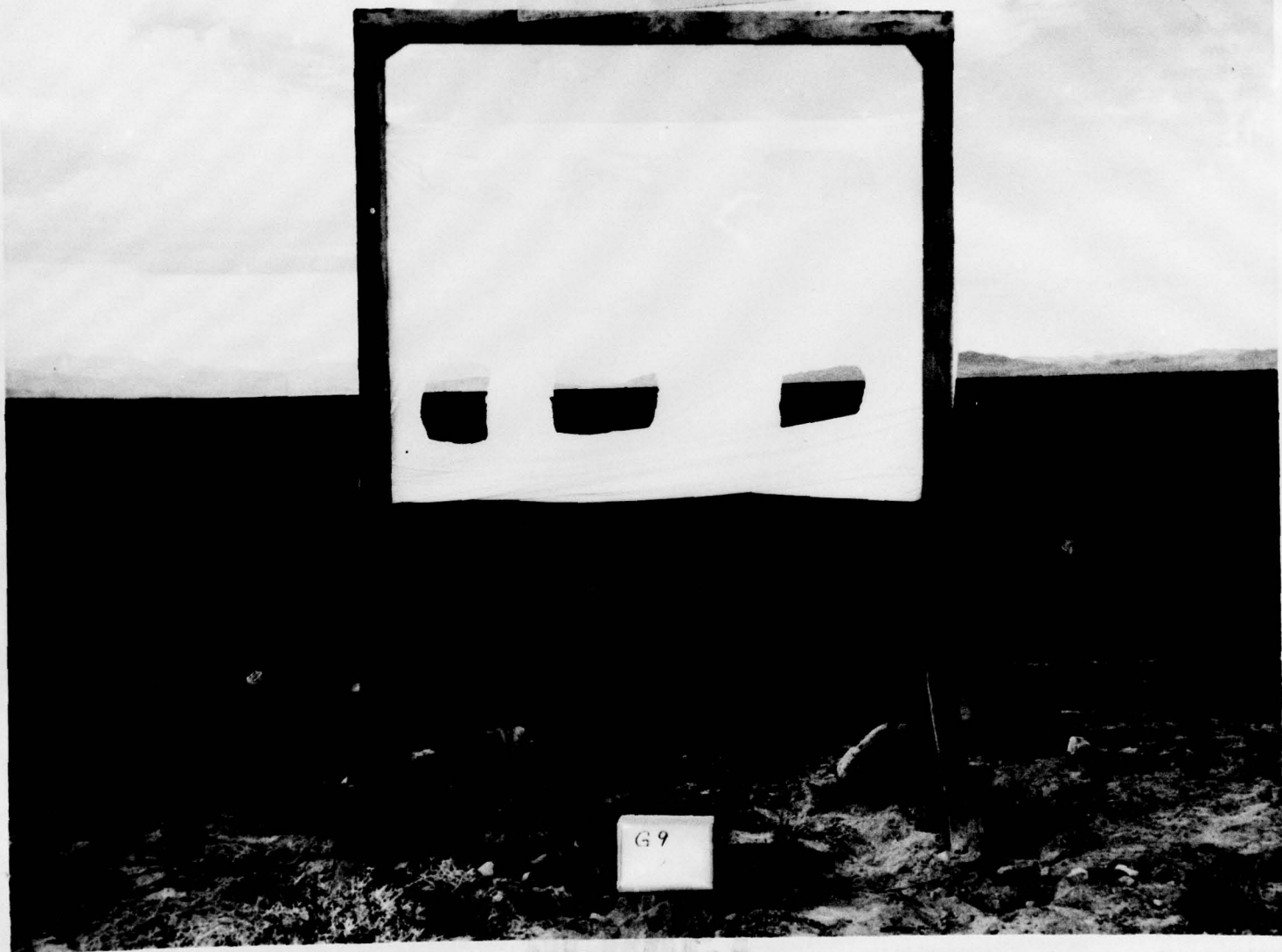


UNCLASSIFIED

BEFORE

38

G9



AFTER

40



AFTER

39

UNCLASSIFIED

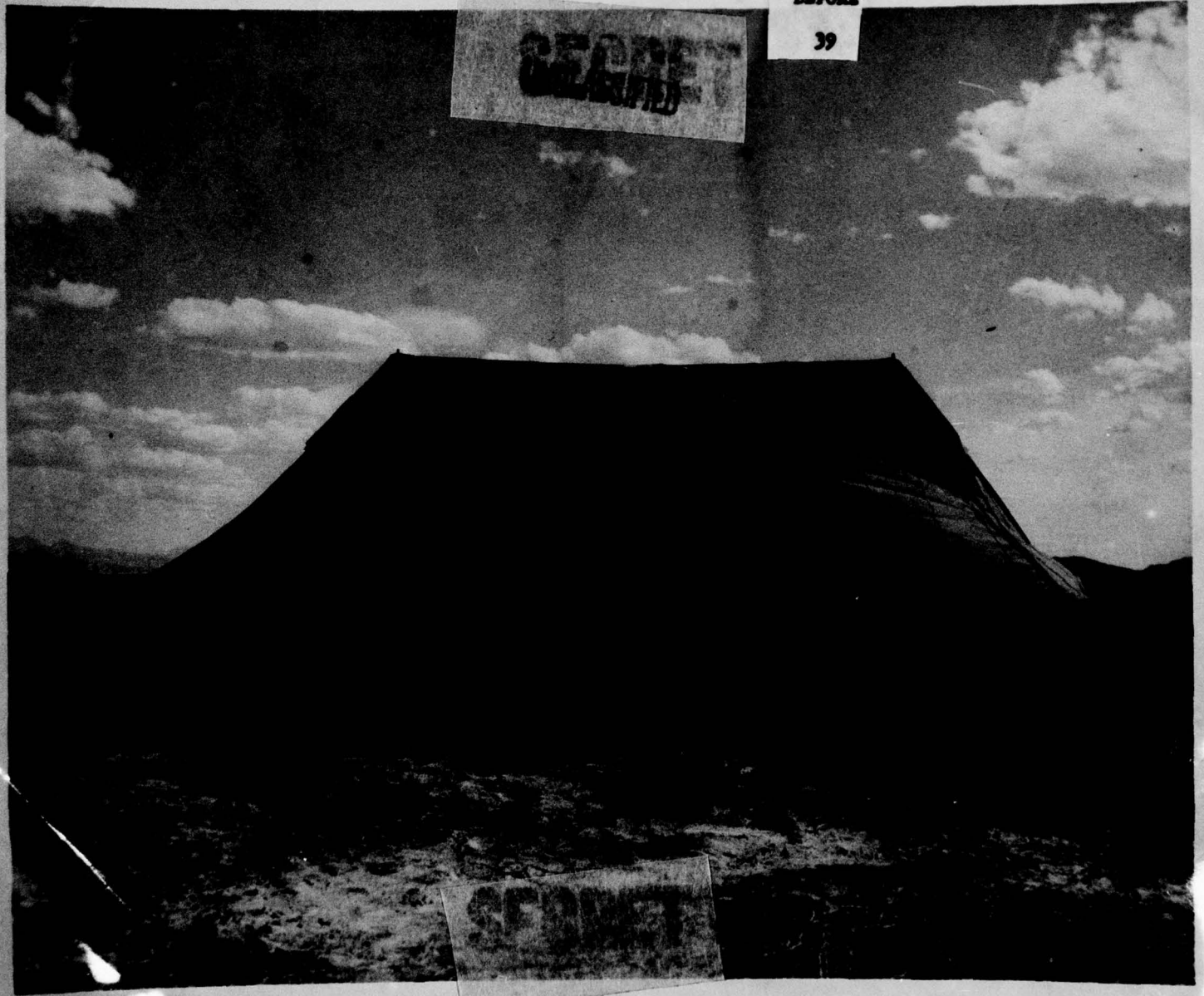




BEFORE

39

SECRET  
CLASSIFIED



BTFORE

hO

SECRET  
UNCLASSIFIED

T-2  
5



AFTER

42

UNCLASSIFIED



UNCLASSIFIED



AFTER

41

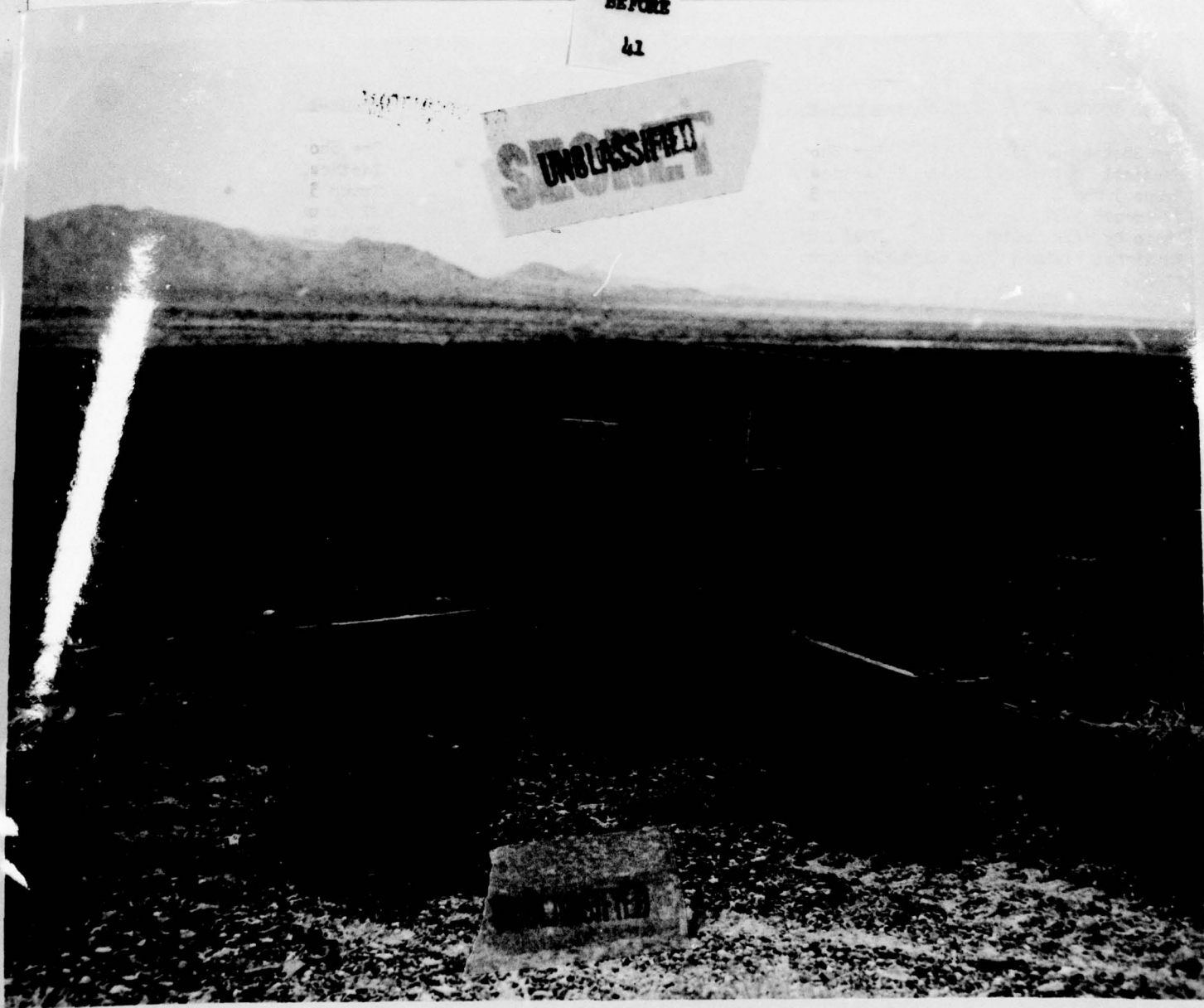
UNCLASSIFIED



BEFORE

41

SECRET



BEFORE

h2

~~SECRET~~  
UNCLASSIFIED





AFTER

44

UNCLASSIFIED



AFTER

43

UNCLASSIFIED

T4  
2

B 50

JK

UNCLASSIFIED



BEFORE

43

T4  
2

UNCLASSIFIED





BEFORE

44

UNCLASSIFIED

T 4

3

UNCLASSIFIED



AFTER

66

UNCLASSIFIED

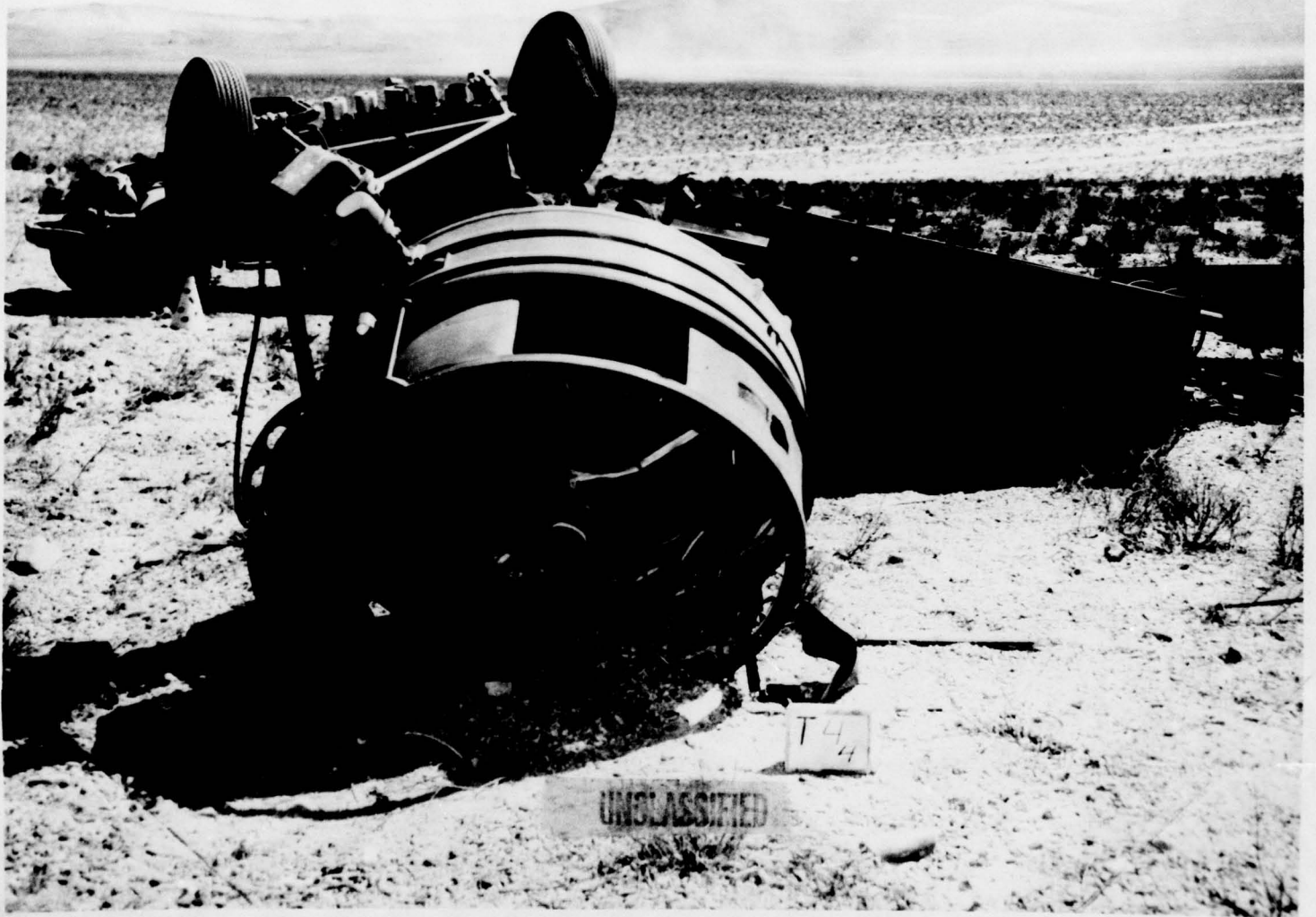


UNCLASSIFIED

AFTER

45

UNCLASSIFIED



UNCLASSIFIED



BEFORE

UNCLASSIFIED  
SECRET



CI-TMP

BEFORE

46

UNCLASSIFIED

T4

21

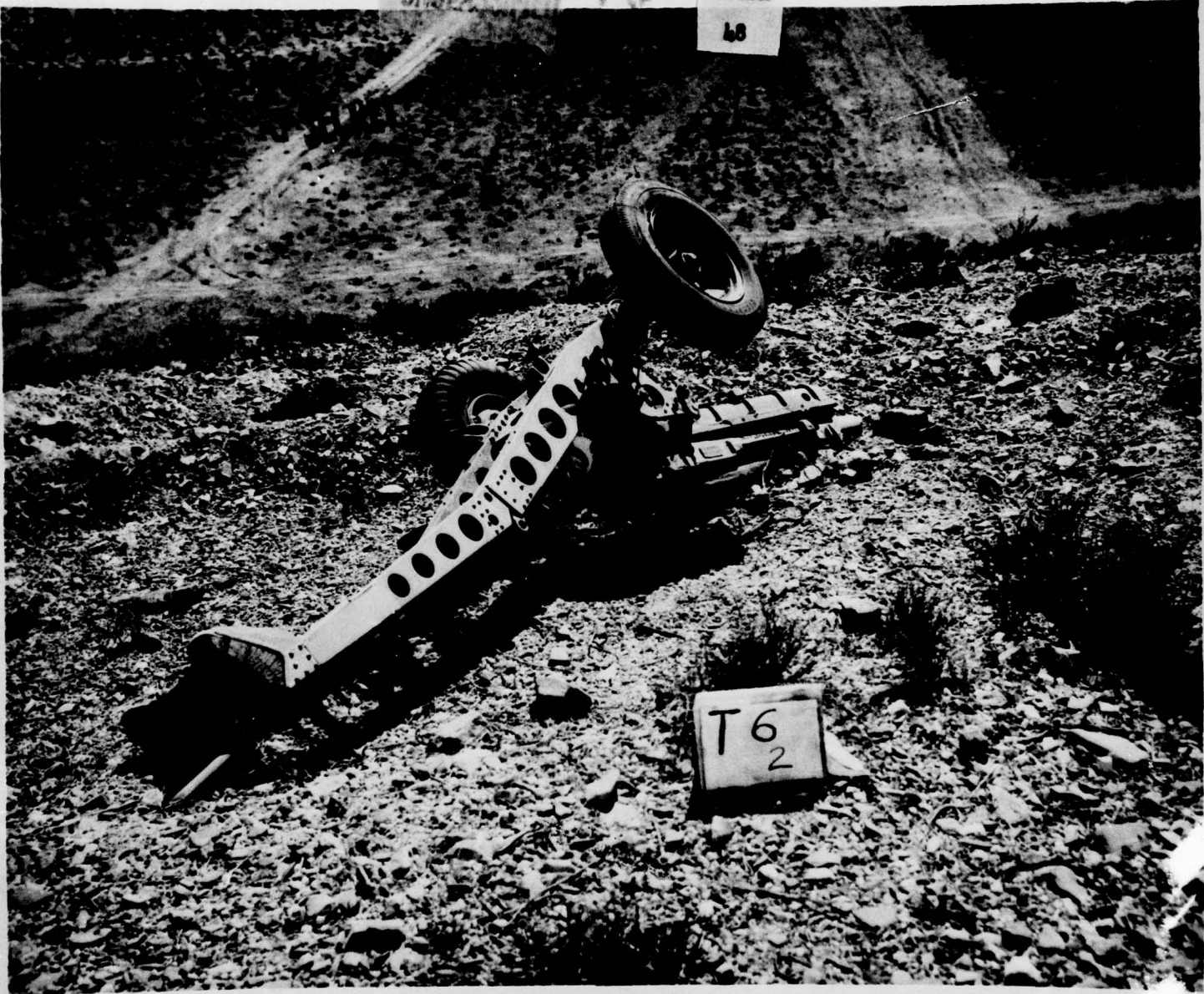
UNCLASSIFIED





UNRECORDED TEST

AFTER  
68



T6  
2



AFTER

47

UNCLASSIFIED



BEFORE

47

~~SECRET~~  
UNCLASSIFIED



BEFORE

48

BEFORE

T 6  
2

BEFORE





AFTER

50

UNCLASSIFIED



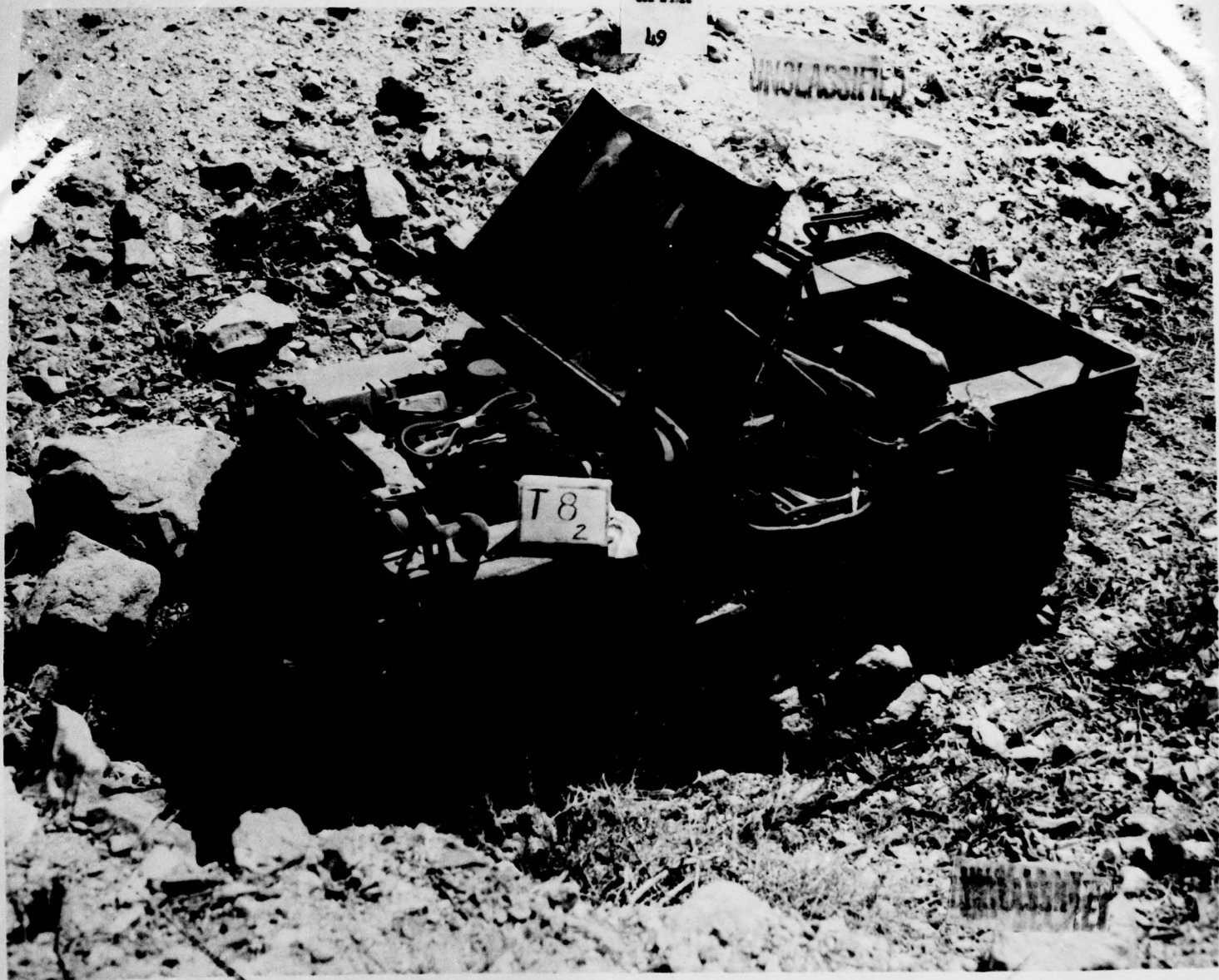
UNCLASSIFIED

AFTER

19

UNCLASSIFIED

T 8  
2

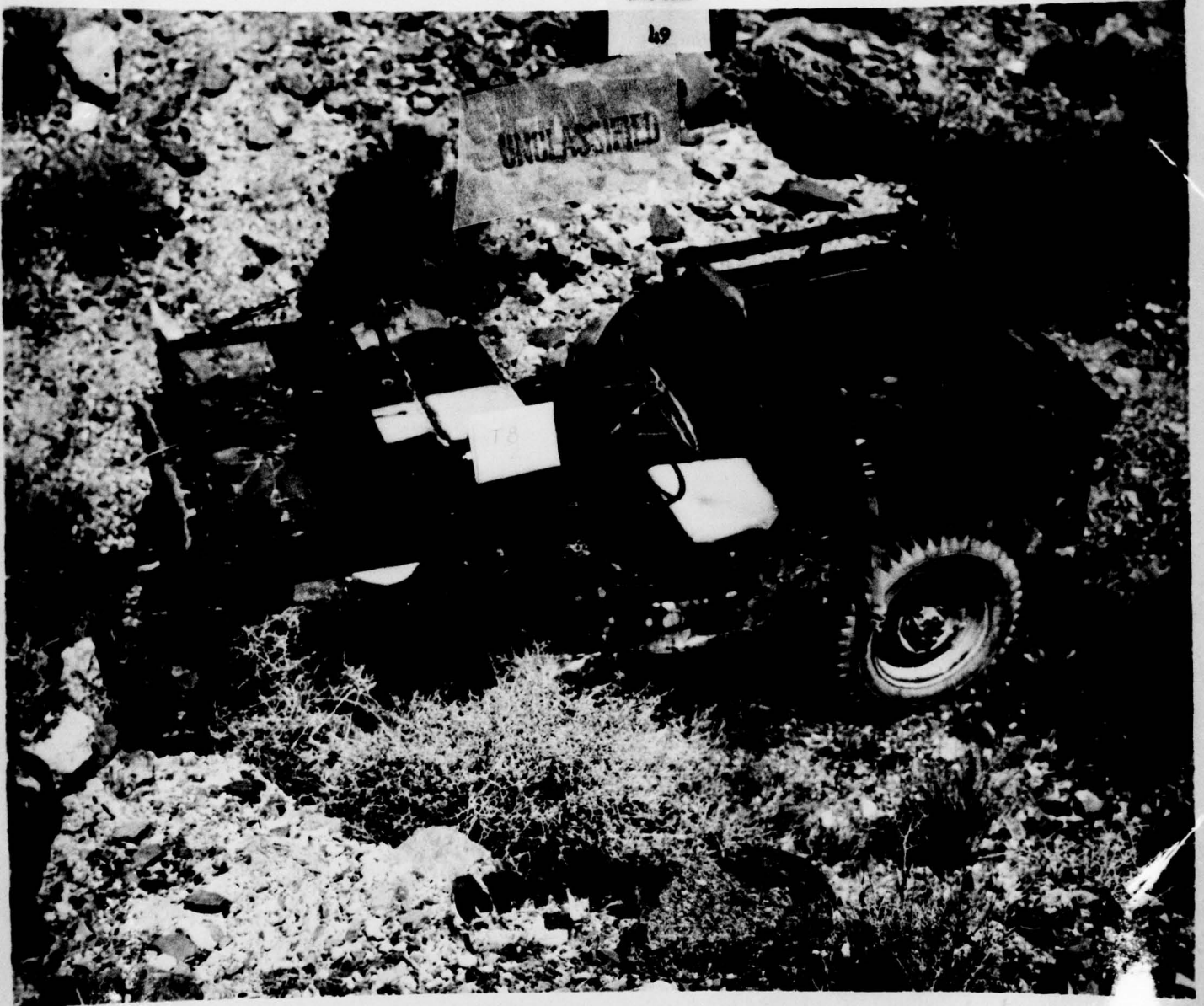


BEFORE

49

UNCLASSIFIED

78





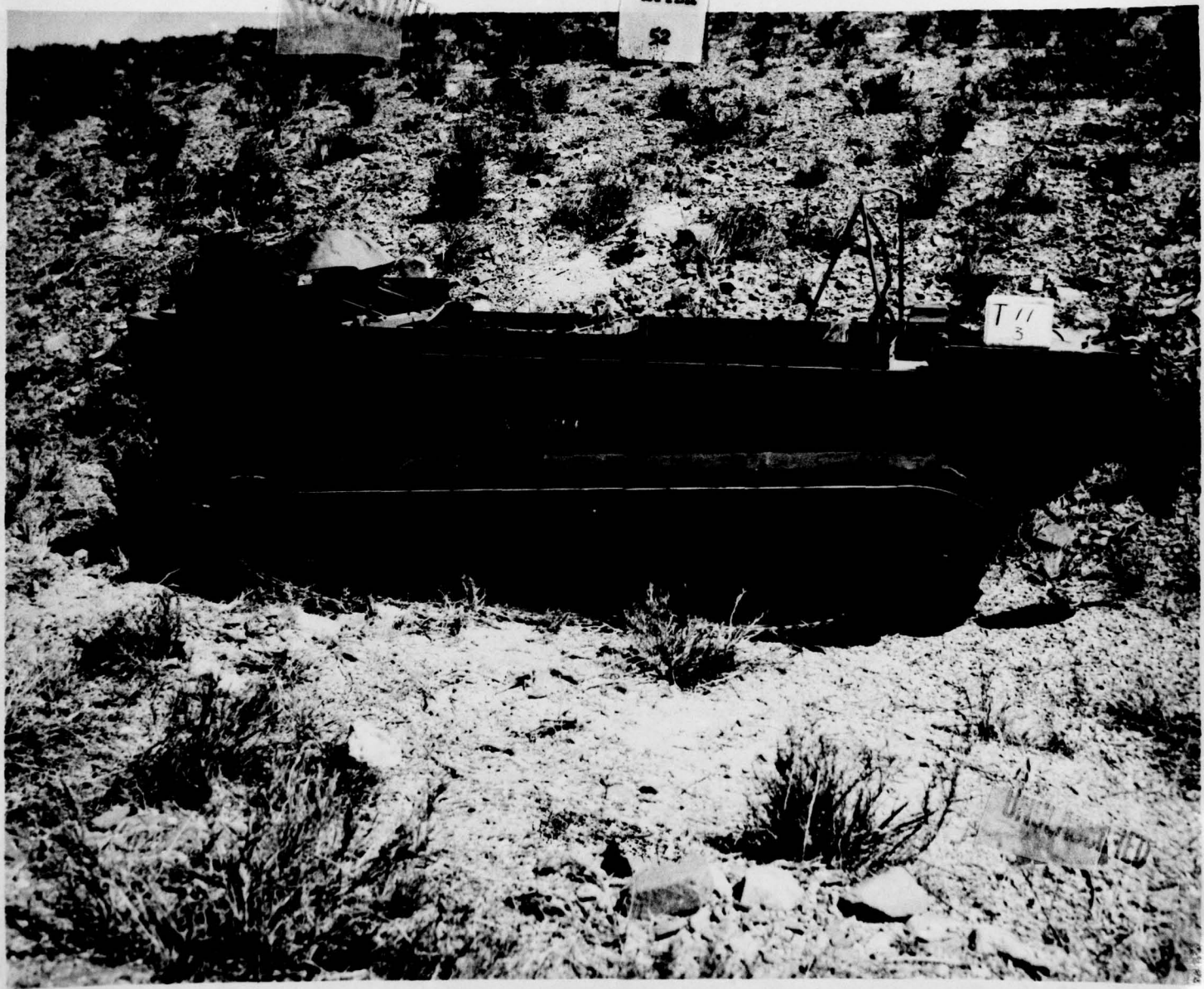
BEFORE

50



UNCLASSIFIED

AFTER  
S2



T 11  
3

UNCLASSIFIED



AFTER

51

UNCLASSIFIED





BEFORE

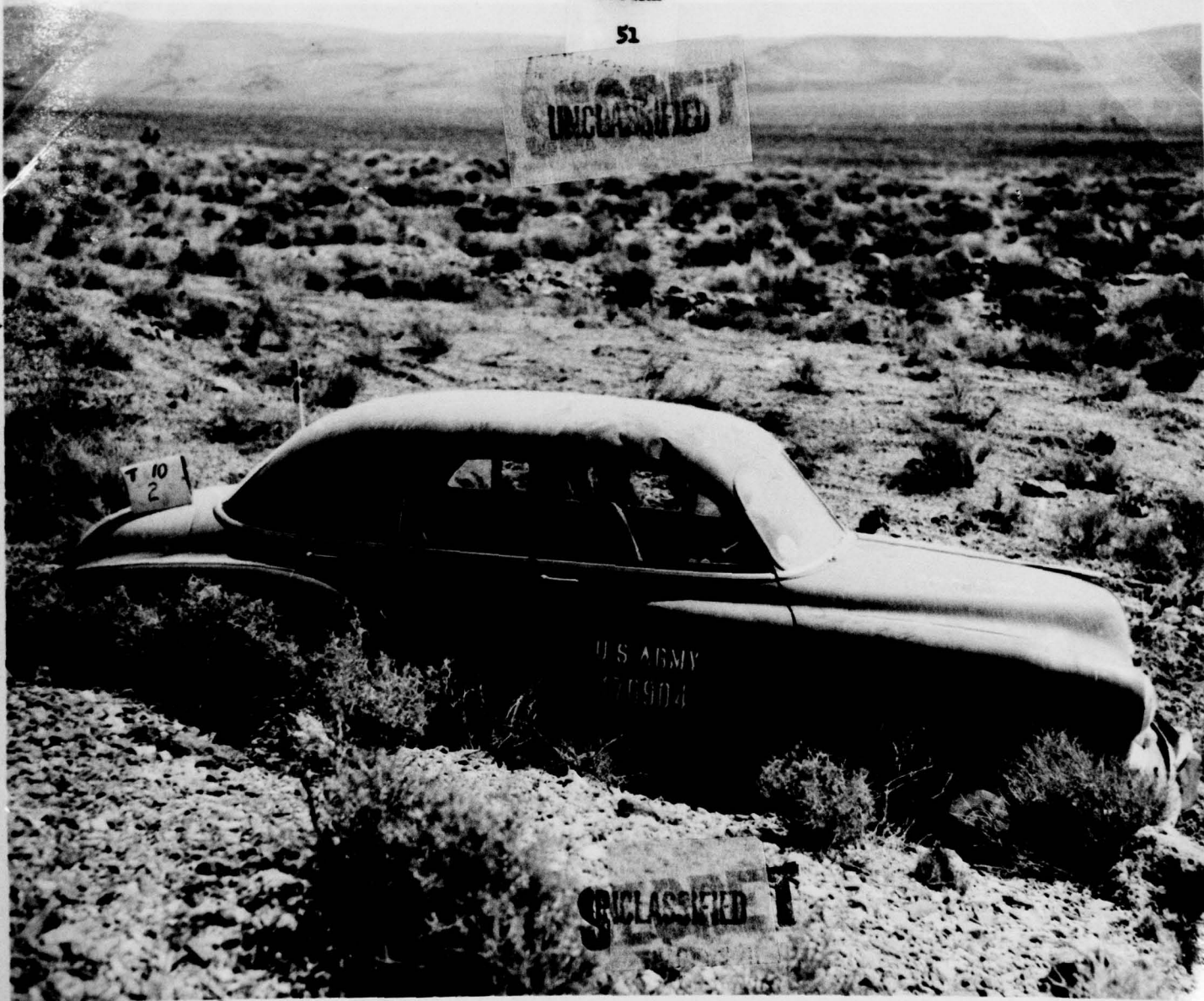
51

UNCLASSIFIED

T 10  
2

U.S. ARMY  
170904

UNCLASSIFIED



BEFORE

52

UNCLASSIFIED

T II  
3

UNCLASSIFIED





AFTER

24

CLASSIFIED

T 12  
# 2

U.S. ARMY  
3548113  
FOR OFFICIAL USE ONLY

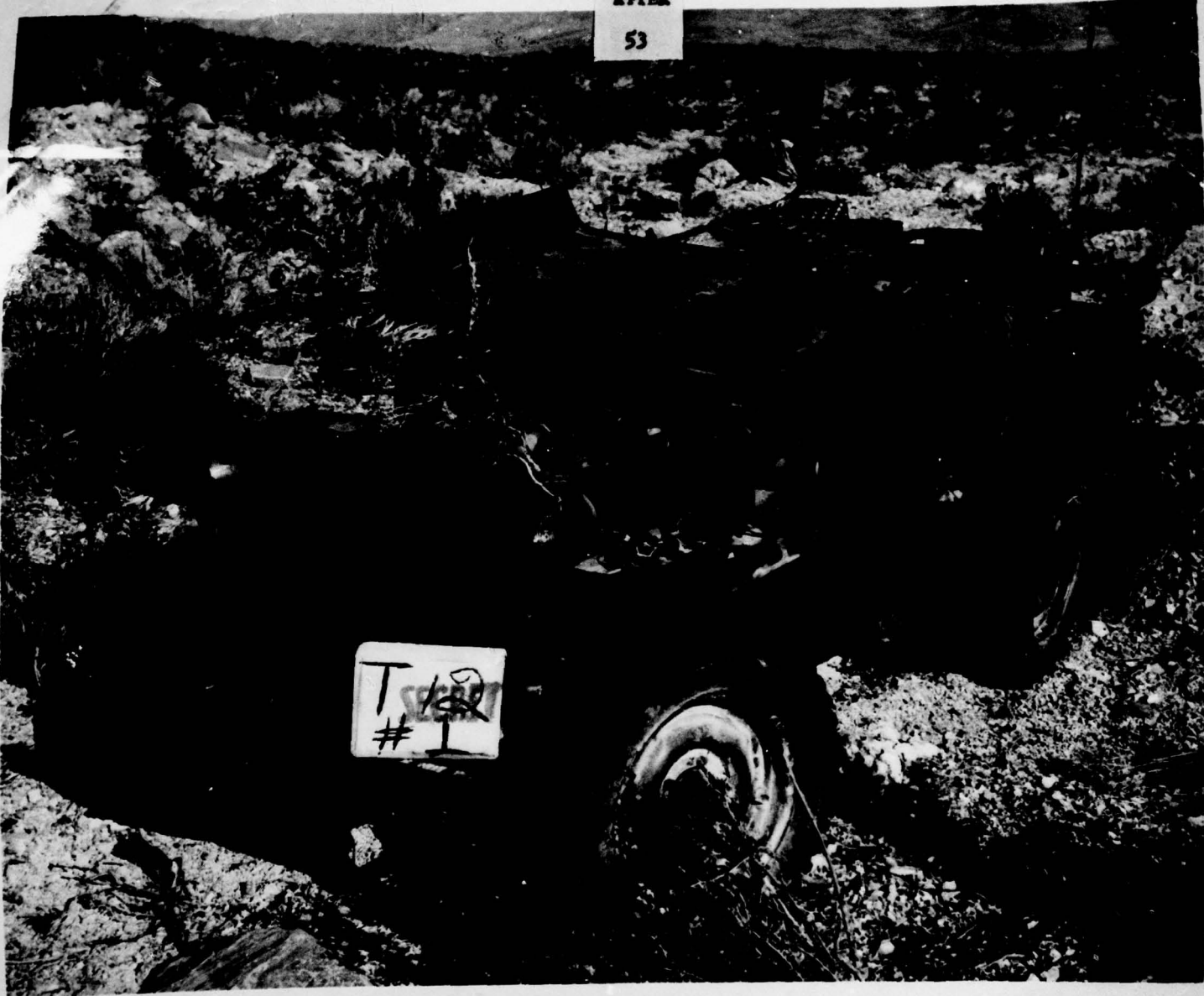
3548113





AFTER

53



BEFORE

53



BEFORE

5

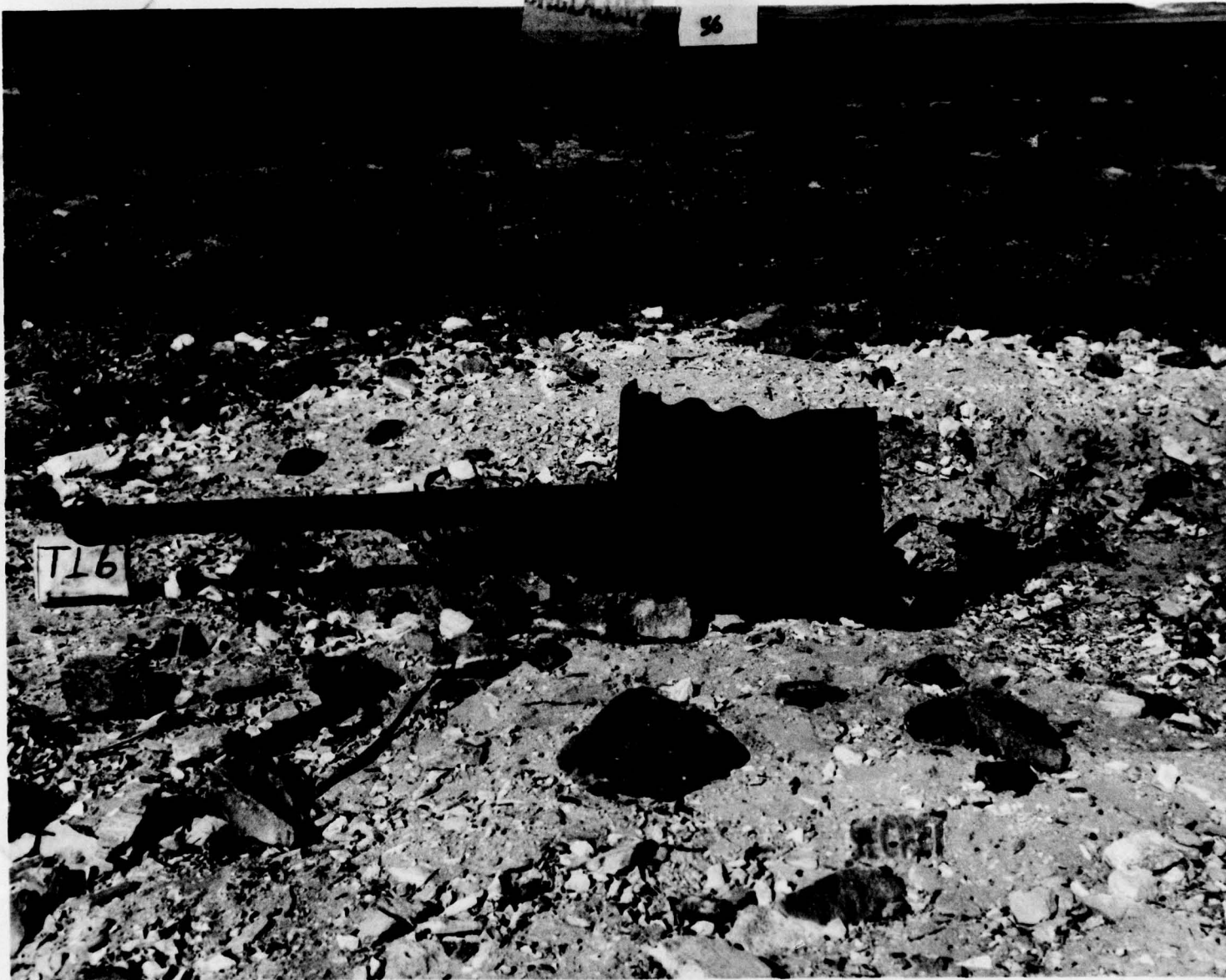




UNCLASSIFIED

AFTER

96



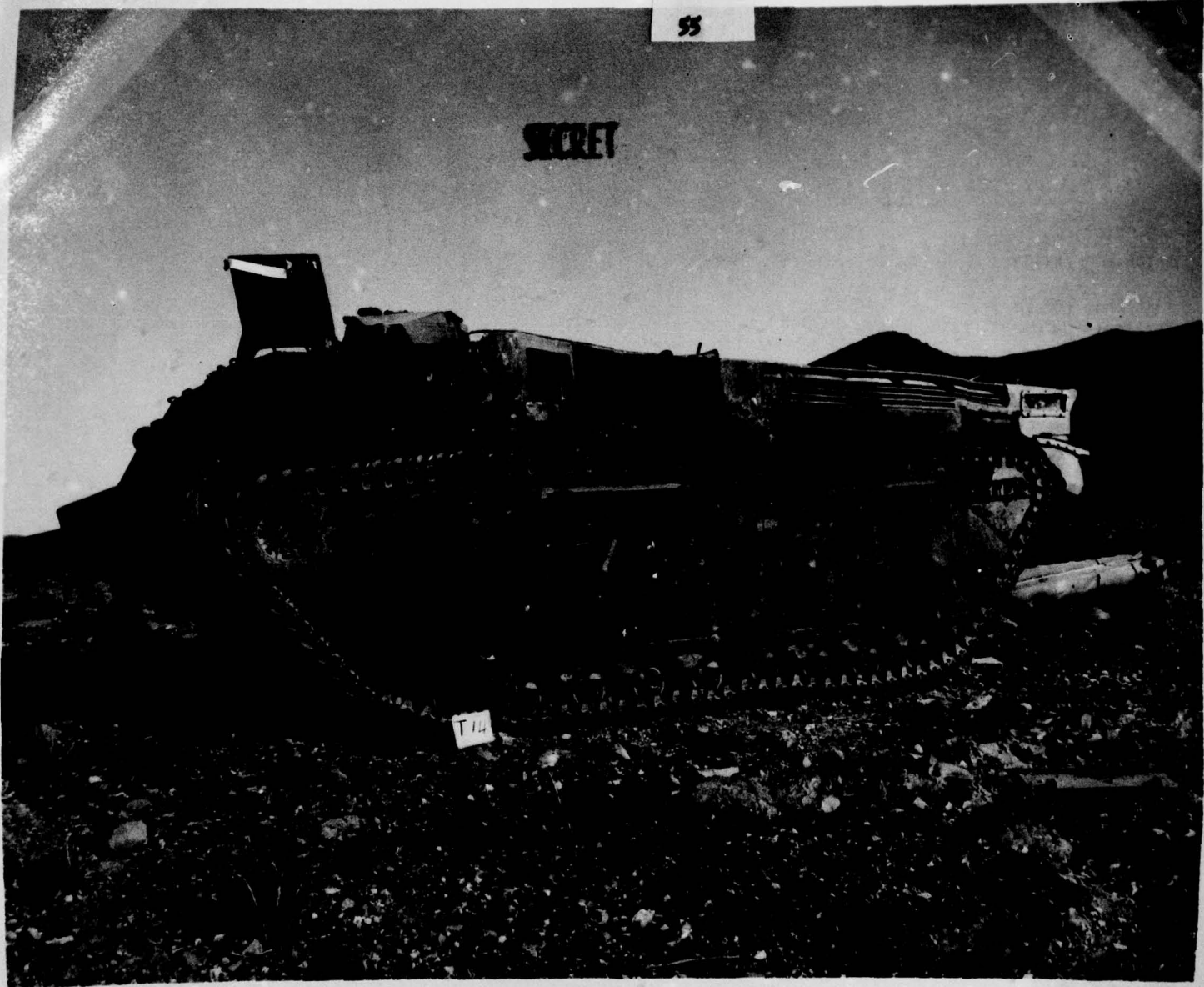
TL6

UNCLASSIFIED

AFTER

SS

SECRET

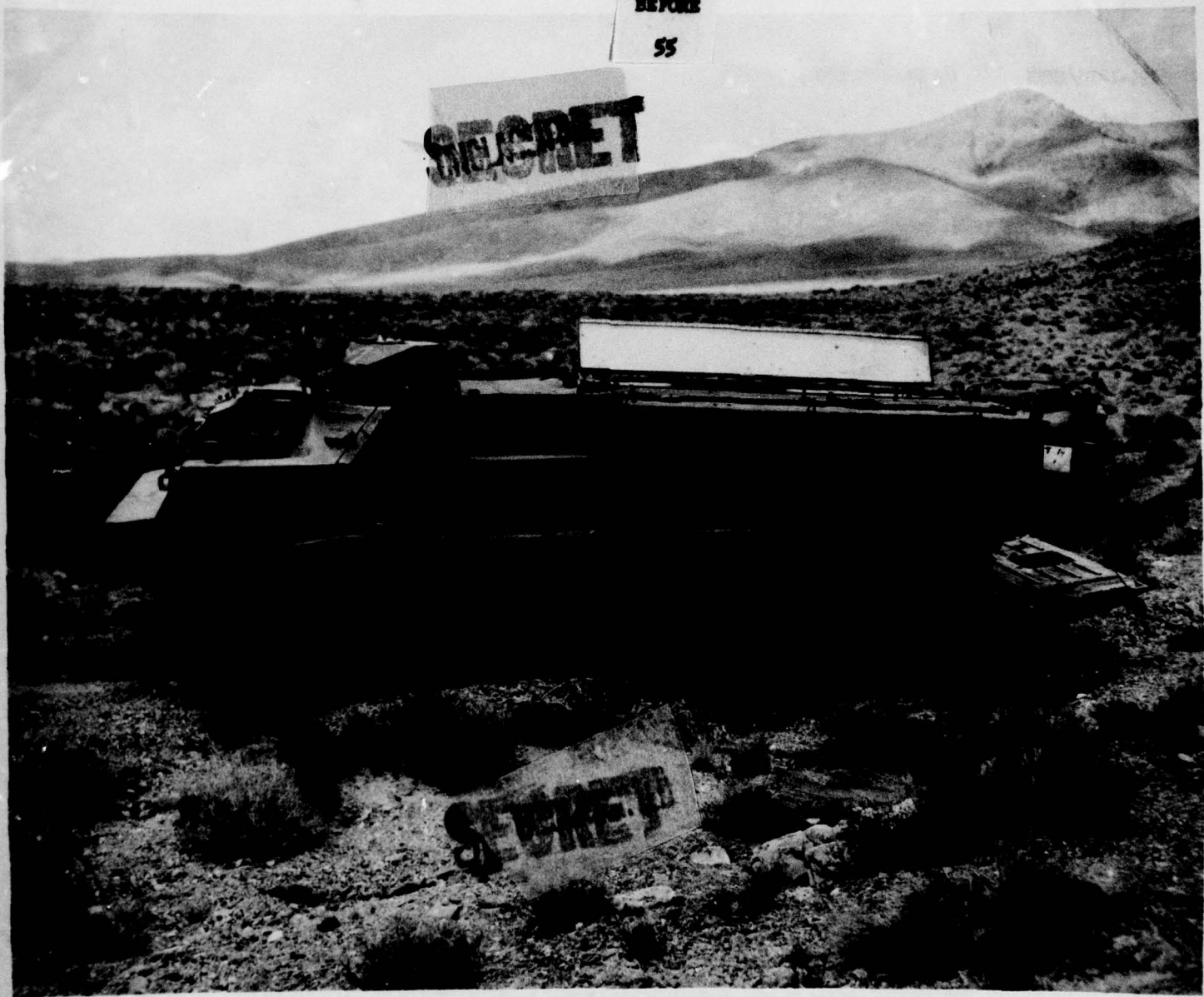


T-12

BEFORE

55

**SECRET**





BEFORE

56



AFTER

98

UNCLASSIFIED





AFTER

57

UNCLASSIFIED

T-7





BEFORE

57

17  
4

SECRET





BEFORE  
58

T17  
2

SECRET



AFTER

60

UNCLASSIFIED



T20

UNCLASSIFIED



AFTER

59

UNCLASSIFIED

T/7  
10

UNCLASSIFIED



BEFORE

59

~~SECRET~~



UNCLASSIFIED



BEFORE

60

T20  
1

INCLOSURE

INCLOSURE





AFTER

62

UNCLASSIFIED

T22



AFTER

61

UNCLASSIFIED

T21

UNCLASSIFIED





REPORT

61

**SECRET**



5



BEFORE

62



AFTER

62



80  
AFTER

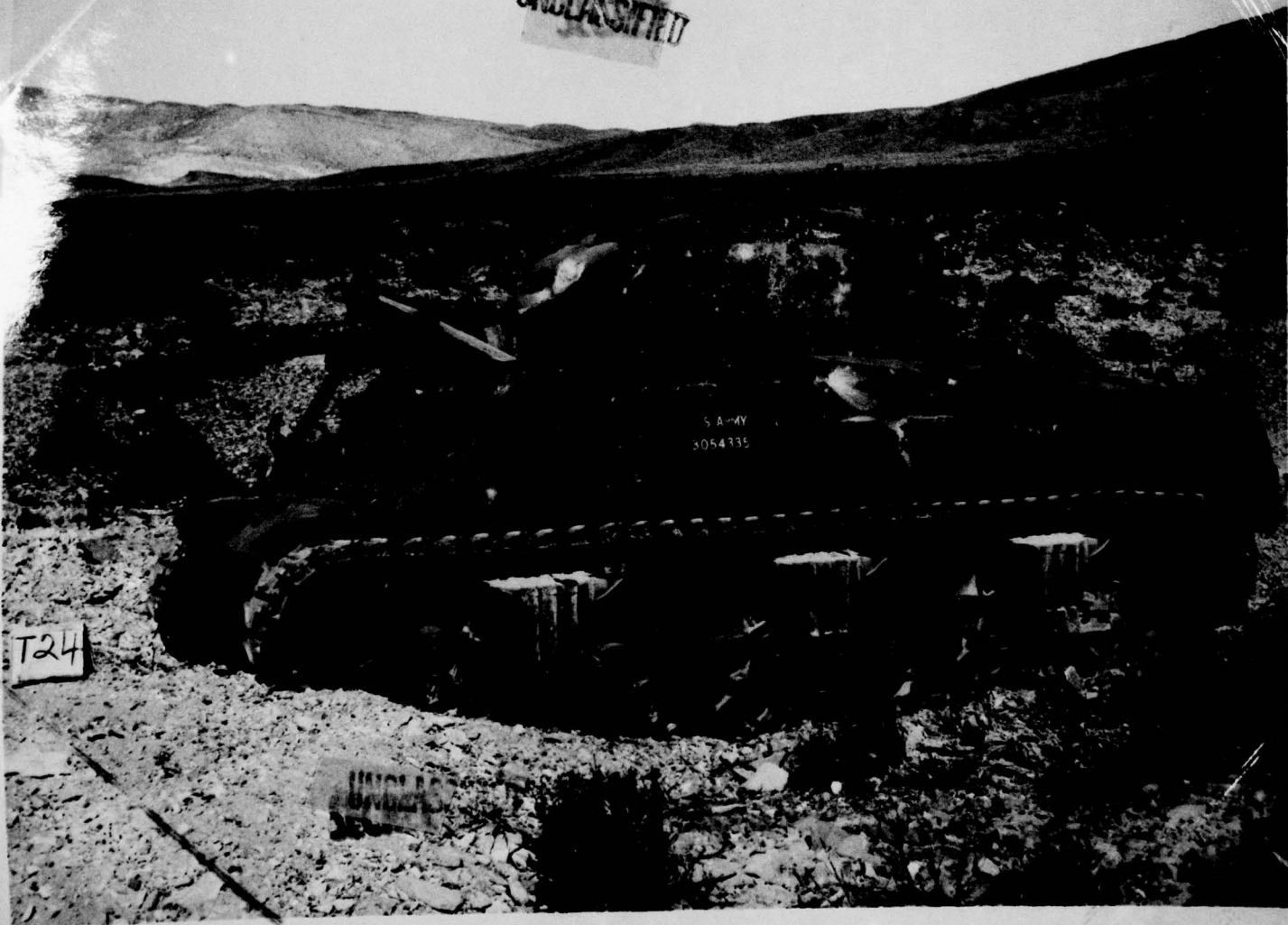
63

UNCLASSIFIED

S.A.-MY  
3054335

T24

UNCLASSIFIED





BEFORE

63

RECORDED 11/25

724

U.S. ARMY  
3054335



BEFORE

6a

UNCLASSIFIED



UNCLASSIFIED



AFTER

UNCLASS

65

SECRET





BEFORE

65

T 27  
2

UNCLASSIFIED

